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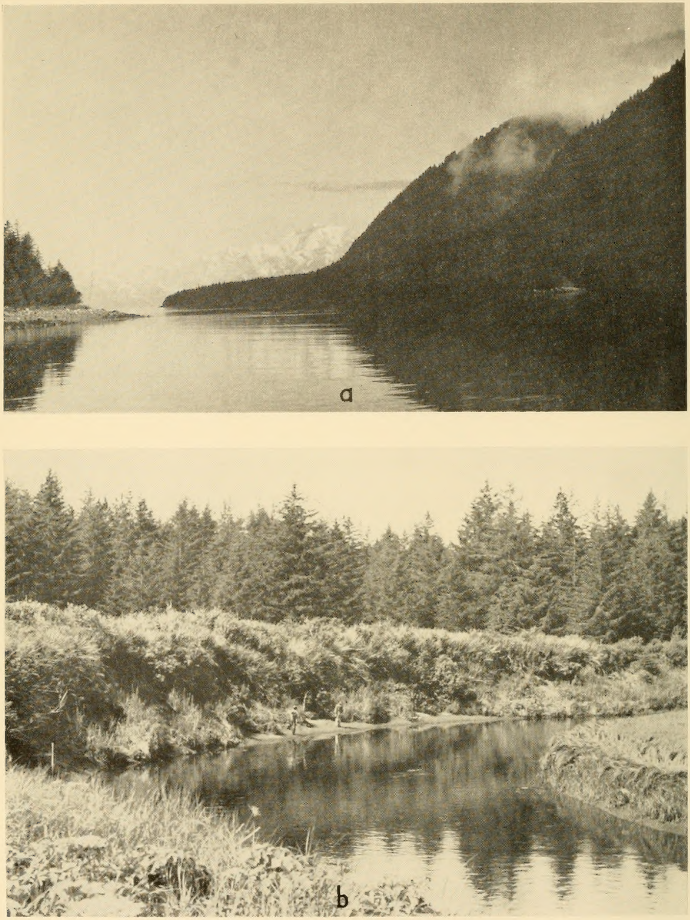

Sites in the Yakutat Bay area.

(For explanation, see p. 218.)

SMITHSONIAN INSTITUTION
BUREAU OF AMERICAN ETHNOLOGY
BULLETIN 192

ARCHEOLOGY OF THE YAKUTAT BAY AREA, ALASKA

By FREDERICA DE LAGUNA, FRANCIS A. RIDDELL,
DONALD F. McGEEIN, KENNETH S. LANE, and J. ARTHUR FREED,
with a chapter by CAROLYN OSBORNE

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LETTER OF TRANSMITTAL

SMITHSONIAN INSTITUTION,
BUREAU OF AMERICAN ETHNOLOGY,
Washington, D.C., June 28, 1963.

SIR: I have the honor to submit the accompanying manuscript, entitled "Archeology of the Yakutat Bay Area, Alaska," by Frederica de Laguna, Francis A. Riddell, Donald F. McGeein, Kenneth S. Lane, and J. Arthur Freed, with a chapter by Carolyn Osborne, and to recommend that it be published as a bulletin of the Bureau of American Ethnology.

Very respectfully yours,

FRANK H. H. ROBERTS, Jr.,
Director.

DR. LEONARD CARMICHAEL,
Secretary, Smithsonian Institution.

SMITHSONIAN
FEB 17 1965
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FOREWORD

This report deals with archeological investigations in the Yakutat Bay area, Alaska, which were undertaken as part of a larger program of coordinated archeological and ethnological studies of the northern Tlingit. The ultimate objective of the program, as originally formulated, was to gather materials on the history of northern Tlingit culture and to analyze as far as possible the factors and forces responsible for the development and decline of Tlingit cultural patterns.

These studies were begun in 1949, when Frederica de Laguna, senior author of the report, made an archeological and ethnological reconnaissance to select some area or areas for the proposed research. On this trip she was assisted by Edward Malin and William Irving, then students at the University of Washington and the University of Alaska, respectively. As a result, the Yakutat region on the Gulf of Alaska and the territory of the Angoon Tlingit in southeastern Alaska were chosen. A report on the fieldwork at Angoon in 1949 and 1950 has been published by the Bureau of American Ethnology as Bulletin 172.

In the summer of 1952 combined archeological and ethnological fieldwork was carried out at Yakutat. The archeological investigations were continued in the summer of 1953, and the ethnological work in the winter and spring of 1954. While Frederica de Laguna was in overall charge of this research, the archeological parties were led by Francis A. Riddell (now State archeologist for the California Department of Parks and Recreation). He was assisted in 1952 by J. Arthur Freed, Kenneth S. Lane, and Donald F. McGeein, and in 1953 by Lane, McGeein, Albert H. Olson, Jr., and Robert T. Anderson (now assistant professor of sociology and anthropology at Mills College), then all students at the University of California or recent graduates from that institution. Dr. Catharine McClellan (now associate professor of anthropology at the University of Wisconsin) collaborated in the ethnological work at Yakutat in 1952, and Mary Jane Downes (now Mrs. Benjamin Lenz, then fellow in anthropology at Bryn Mawr College) served as ethnographic assistant in 1954. In connection with this program, a study of Eyak linguistics was made at Yakutat in 1952 by Dr. Fang-Kuei Li, Department of Far Eastern Studies, University of Washington. When it became apparent that the ethnographic investigations should be extended to the neighbors of the Yakutat Indians, Frederica de Laguna and Catharine McClellan collaborated in studying the Atna of the Copper River during the summers of 1954, 1958, and 1960.

The field researches at Yakutat were supported by the Arctic Institute of North America, with funds from the Office of Naval Research, in 1949 and 1953; by the Wenner-Gren Foundation for Anthropological Research in 1949 and 1952; by the Social Science Research Council and the American Philosophical Society in 1954; and by the Department of Anthropology, University of California at Berkeley, in 1952 and 1953. The University of Pennsylvania Museum and Bryn Mawr College were also sponsors. A faculty research fellowship from the Social Science Research Council and the hospitality of the Berkeley campus during the senior author's sabbatical leave have permitted her to finish this report.

We wish to express our gratitude to the above-named organizations and also to acknowledge the assistance generously given by the U.S. Geological Survey, the National Park Service, the U.S. Fish and Wildlife Service, the Alaska Native Service, and the U.S. Coast Guard. We are also grateful for the valuable information furnished by Dr. J. Louis Giddings, director of the Haffenreffer Museum, Brown University; by Elizabeth Ralph, Radiocarbon Laboratory, University of Pennsylvania; by Dr. Charles E. Borden, University of British Columbia; by Dr. William O. Field, of the American Geographical Society; by Dr. Calvin J. Heusser of the Osborn Botanical Laboratory at Yale University; and by George Plafker and the late Don J. Miller, of the U.S. Geological Survey.

In preparing this report, Francis A. Riddell was responsible for the original descriptions of the artifacts and of the archeological features at the Old Town site, although his preliminary draft was later revised. Donald McGeein collaborated with Riddell and also drew all the maps, diagrams, and text figures, except a few prepared by E. F. Chapman, Mrs. Arlie Ostlie, Irene Brion, Richard A. Gould, and Frederica de Laguna. The photographs of specimens were taken by the late Reuben Goldberg, of the University of Pennsylvania Museum, with the exception of a few by Kenneth Lane and the Campus Studios of the University of Washington. Arthur Freed and Kenneth Lane prepared the analysis of faunal remains. We are indebted to Carolyn Osborne for the description and interpretation of the Yakutat blanket. While the senior author has been responsible for the organization and editing of the report in general, her specific contributions have been the ethnological and comparative sections, and the historical and theoretical speculations.

For assistance in the final editorial preparation of the report for publication, we wish to thank Mr. Edward G. Schumacher, illustrator for the Bureau of American Ethnology, and Mrs. Eloise B. Edelen, editor for the Bureau, and her assistants.

FREDERICA DE LAGUNA,
Bryn Mawr College;
FRANCIS A. RIDDELL,
California Department of Parks and Recreation;
DONALD F. MCGEEIN;
KENNETH S. LANE;
J. ARTHUR FREED.

* * * * * * *

NOTE

The system used herein for transliterating native words is essentially that employed by Boas (1917) for Tlingit, except that digraphs are used for affricatives, and A, E, I, and U are substituted for Greek letters.

The archeological specimens are deposited in the University of Pennsylvania Museum in Philadelphia, although for the most part they are designated by their field catalog numbers (in parentheses).

ARCHEOLOGY OF THE YAKUTAT BAY AREA, ALASKA

By Frederica de Laguna, Francis A. Riddell, Donald F. McGeein, Kenneth S. Lane, and J. Arthur Freed, with a chapter by Carolyn Osborne

INTRODUCTION[1]

By Frederica de Laguna

THE PROBLEM

The archeological and ethnological researches begun at Yakutat in 1949 had as their purpose to trace the development and decline of northern Tlingit culture from the earliest period that might be represented archeologically down to the present. The aim was not simply to describe the history of the culture, but to analyze, if possible, the dynamic processes involved.

It was hoped that archeological investigations in northern Tlingit country might furnish evidence to test the hypothesis of ancient and long-continued cultural exchanges between the southwestern Alaskan Eskimo and the Indians of southeastern Alaska (de Laguna, 1947, pp. 12 f.). These exchanges were believed to have begun before the development of specific Northwest Coast cultural patterns, and later to have contributed to their growth, especially by supplying influences from the Asiatic side of the North Pacific. It was also suggested that the distinctive and specialized cultures of the late prehistoric and historic periods on the northern and central Northwest Coast had been built upon a foundation culturally and chronologically related to the most ancient cultures in the Aleut-Pacific Eskimo and Coast Salish areas. This belief implied that northern Tlingit archeology would, therefore, not only reflect the stages of development of classic Northwest Coast culture, even though its centers were assumed to lie much farther south (Kroeber, 1939, pp. 28 ff.), but would also indicate to what extent influences from the north and west may have stimulated this cultural growth. Excavations at Yakutat were expected to be particularly important in testing these hypotheses, since cultural exchanges between southwestern and

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[1] See note, page XI.

INSTITUTION

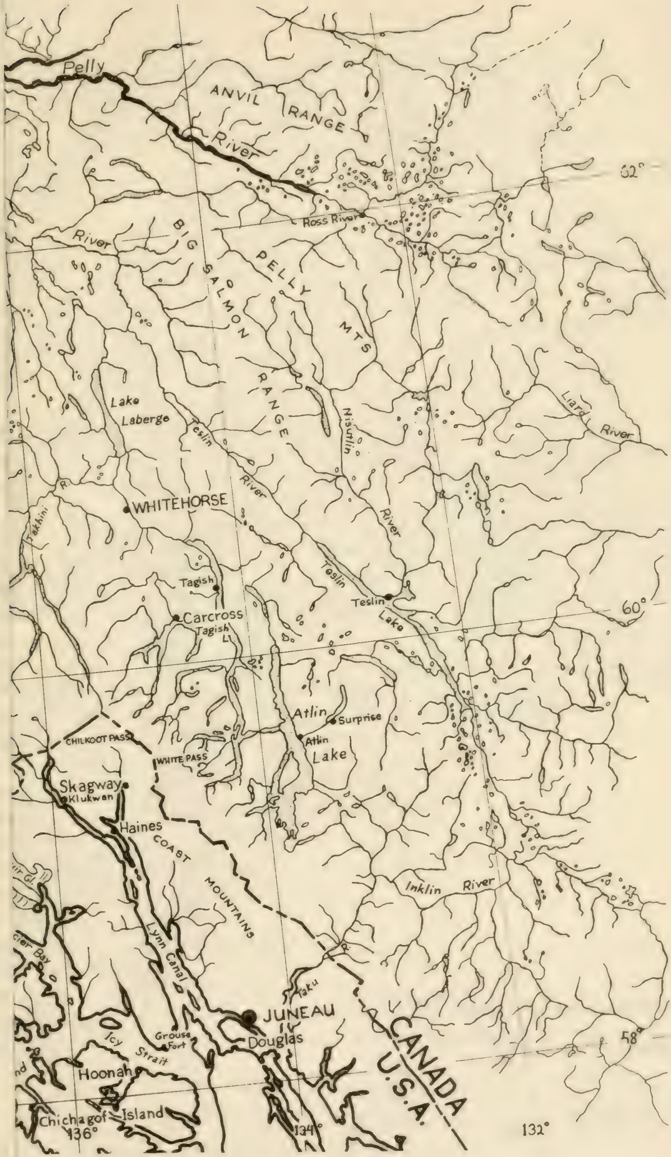
southeastern Alaska were probably made via Yakutat Bay, the only secure shelter for boats on the whole Gulf of Alaska from Controller Bay to Cross Sound. (Map 1.)

From an ethnological point of view, the Yakutat Tlingit are the most marginal participants of northern Northwest Coast culture, except for the even more remote Eyak of the Copper River Delta and the Inland Tlingit. Unlike the latter (McClellan, 1953), who must struggle to adapt coastal sophistication to an inhospitable interior environment, the Yakutat occupy a region with an aboriginal reputation for abundant food resources and with a strategic situation for trade. From the Atna of the Copper River and the Tutchone of the Alsek River, the Yakutat people formerly obtained copper, furs, and tanned skins, which they exchanged for dentalia, slaves, Haida canoes, and Tsimshian carvings. At a later period they acted as middlemen in handling goods from the Russian posts at Nuchek in Prince William Sound and at Sitka, as well as wares procured from fur traders and the Hudson's Bay Company, and even traveled to Kodiak and to Victoria. These widespread intertribal contacts suggest that the Yakutat possessed more than a backward version of Northwest Coast culture, even though many peculiarities of idiom and custom which distinguish the Yakutat from the better known, typical, Tlingit of southeastern Alaska may well represent archaisms.

The Yakutat are now greatly acculturated, but until about 1884, when the first store was established among them, they had been largely isolated from intensive contacts with White men, except during the period of Russian occupation, 1795 to 1805. Within the memory of the old people, therefore, the Indians were living much as they had a century before, when first visited by Europeans. The Yakutat are a very friendly people and gave us a large body of ethnographic data which will form the basis for a separate monograph.

A number of sites near Yakutat gave promise of revealing early historic and late prehistoric phases of the culture, although no very ancient remains were found. The present report deals largely with the archeology of a late prehistoric or early protohistoric village site, "Old Town," on Knight Island in Yakutat Bay. Native traditions give semilegendary histories of the founding and abandonment of a number of settlements which we explored.

Although the Yakutat are now Tlingit, the earlier inhabitants of the area spoke Eyak, and many of the local place names are in that language. It is apparently a branch of the Na-Déné stock, but its exact relationship to Tlingit, Haida, and Athabaskan must remain uncertain until Dr. Li has finished his linguistic analysis. According to Radlov (1859), there was a Copper River and a Yakutat dialect of Eyak. Until some time in the 18th century, Eyak was spoken from


Pelly
ANVIL RANGE
River
62°
Ross River
River
BIG SALMON RANGE
PELLY MTS
Liard River
Lake Laberge
Teslin River
Nisutlin River
Takhini R.
WHITEHORSE
Teslin
Tagish
Teslin
Teslin Lake
60°
Carcross
Tagish L.
Atlin
Surprise
Atlin
Atlin Lake
CHILKOOT PASS
WHITE PASS
Skagway
Klukwan
Haines
COAST MOUNTAINS
Inklin River
Glacier Bay
Lynn Canal
Taku R.
JUNEAU
Douglas
CANADA
U.S.A.
58°
Icy Strait
Grouse Fort
Hoonah
Chichagof Island
136°
134°
132°

"Alaska, Map B."

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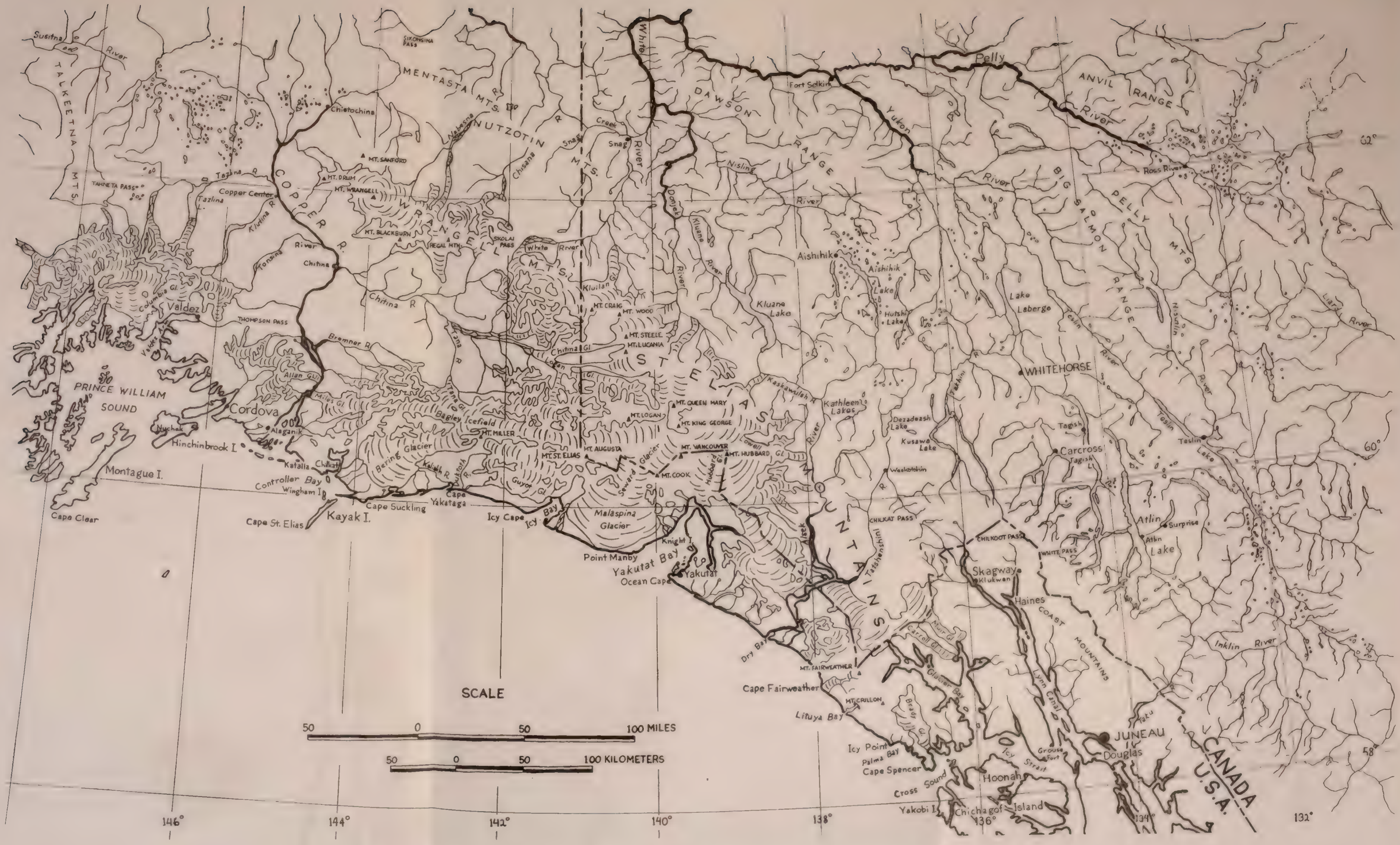

Susitna River
TALKEETNA MTS.
TAHNETA PASS
Tazlina R.
Tazlina L.
Copper Center
Klutina R.
Tonsina River
Chitina
COPPER R.
Chistochina
SIKONSINA PASS
MENTASTA MTS.
Nabesna R.
NUTZOTIN MTS.
MT. SANFORD
MT. DRUM
MT. WRANGELL
WRANGELL MTS.
MT. BLACKBURN
REGAL MTN.
SKOLAI PASS
Chisana R.
Snag Creek
Snag
White River
Donjek River
Kluane River
Kluane Lake
Nisling River
DAWSON RANGE
Fort Selkirk
Yukon River
Pelly River
ANVIL RANGE
Ross River
BIG SALMON RANGE
PELLY MTS.
Aishihik
Aishihik Lake
Hutshi Lake
Lake Laberge
Teslin River
Nisutlin River
Liard River
WHITEHORSE
Tagish
Carcross
Tagish L.
Teslin Lake
Atlin
Atlin Lake
Surprise
Inklin River
Taku
Columbia Gl.
Valdez
Valdez Arm
THOMPSON PASS
Chitina R.
Bremner R.
Tana R.
Allen Gl.
Miles Gl.
Tana Gl.
Bagley Icefield
Bering Glacier
Kaliakh R.
Duktoth R.
Guyot Gl.
MT. MILLER
Kluilan Gl.
MT. CRAIG
MT. WOOD
MT. STEELE
MT. LUCANIA
Chitina Gl.
Logan Gl.
ST. ELIAS MOUNTAINS
MT. QUEEN MARY
MT. KING GEORGE
MT. LOGAN
MT. AUGUSTA
MT. ST. ELIAS
MT. VANCOUVER
MT. HUBBARD
MT. COOK
Seward Glacier
Hubbard Gl.
Lowell Gl.
Kaskawulsh R.
Kathleen Lakes
Dezadeash Lake
Kusawa Lake
Weskatahin R.
Alsek River
Tatshenshini R.
CHILKAT PASS
CHILKOOT PASS
WHITE PASS
Skagway
Klukwan
Haines
COAST MOUNTAINS
PRINCE WILLIAM SOUND
Cordova
Alaganik
Nuchek
Hinchinbrook I.
Montague I.
Cape Clear
Katalla
Chilkat
Controller Bay
Wingham I.
Cape St. Elias
Kayak I.
Cape Suckling
Cape Yakataga
Icy Cape
Icy Bay
Malaspina Glacier
Point Manby
Knight I.
Yakutat Bay
Yakutat
Ocean Cape
Dry Bay
MT. FAIRWEATHER
Cape Fairweather
MT. CRILLON
Lituya Bay
Brady Gl.
Carroll Gl.
Muir Gl.
Glacier Bay
Lynn Canal
Icy Point
Palma Bay
Cape Spencer
Cross Sound
Icy Strait
Grouse Fort
Hoonah
Yakobi I.
Chichagof Island
JUNEAU
Douglas
CANADA
U.S.A.
SCALE
50 0 50 100 MILES
50 0 50 100 KILOMETERS
146°
144°
142°
140°
138°
136°
134°
132°
62°
60°
58°

MAP 1.—The Gulf coast of Alaska. Redrawn by Richard A. Gould from U.S.G.S. Topographic series, "Alaska, Map B."

693-818 O-64 (Face p. 2)

Cordova on the eastern edge of Prince William Sound to the Italio River, a little over 30 miles east of Yakutat. Still farther east, the inhabitants of the Akwe River and Dry Bay area are reported to have spoken Athabaskan (Tutchone?). Already in the 18th century was being felt that movement of Tlingit from southeastern Alaska which introduced Tlingit speech and culture to Yakutat Bay, and some Tlingit were apparently even then living at Lituya and Dry Bays. The Russians in 1788 and Malaspina in 1791 met Tlingit in Yakutat Bay; Colnett (MS., 1788) noted that the natives there spoke different languages. We do not know when Eyak was completely abandoned in favor of Tlingit. Some items of material culture, notably the hunting canoe with forked prow, link the Yakutat with the Eyak of the Copper River Delta.

According to Birket-Smith (Birket-Smith and de Laguna, 1938, pp. 530 f.), Eyak culture represents a very ancient phase of northern Northwest Coast culture, somewhat modified by more recent influences from the Eskimo and the Tlingit. Although it may be impossible to trace Eyak speech southeast of the Italio River, it seems likely that all the northern Tlingit area was occupied until relatively recently by small scattered populations with a simple form of Northwest Coast culture, quite possibly one similar to that of the Eyak (de Laguna, 1953). Nowhere in northern Tlingit territory are there large or numerous archeological sites comparable to those of the Koniag or Chugach or to those on the southern British Columbia coast (Drucker, 1943). Tlingit sib traditions would indicate a very recent expansion of population, owing in part to immigration from the south, perhaps under pressure from the Tsimshian and Haida, in part to immigration of Athabaskans from the interior, and in part to local population growth. This expansion probably accompanied the development of classic Tlingit cultural patterns. An important factor may have been contact with the European traders in the 18th century which made possible a richer life on the coast. The same processes by which the coastal Tlingit of southeastern Alaska absorbed and acculturated originally non-Tlingit elements presumably operated in the Yakutat area, where some of the events and changes are remembered in oral traditions.

It was expected, therefore, that archeological research at Yakutat would reveal a rather simple type of culture, resembling the culture reported ethnologically from the Copper River Eyak, and that the more recent sites might document the growth of Tlingit influence.

TRADITIONAL HISTORY OF THE YAKUTAT AREA

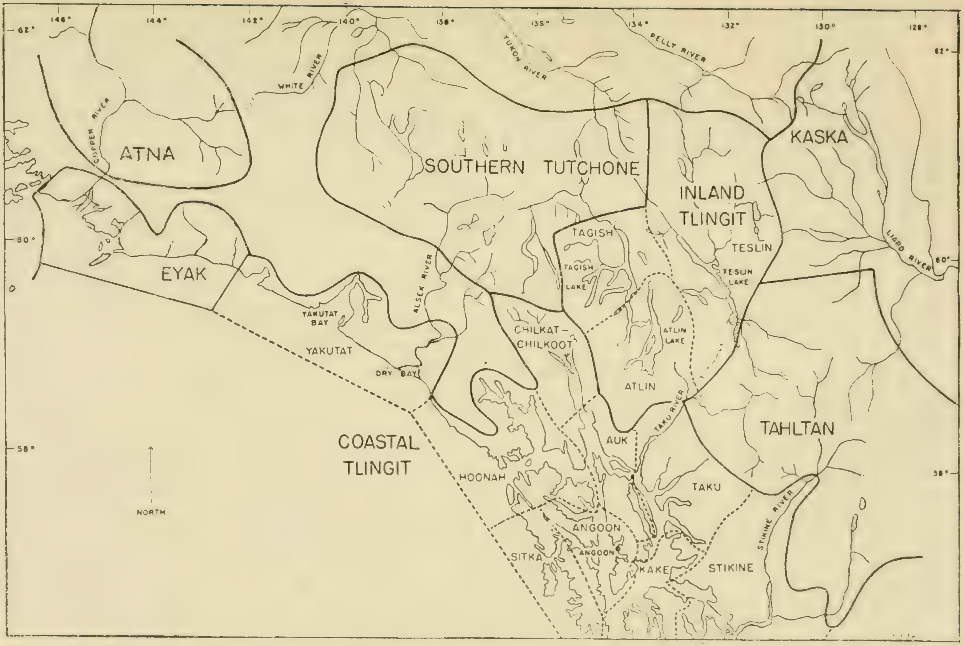
According to informants at Yakutat, their ancestors once occupied all of the Gulf of Alaska from Cape Martin, east of the Copper River, to

Cape Fairweather between Dry Bay and Lituya Bay. The Eyak of the Copper River Delta farther west were not a distinct people; indeed, the inhabitants of Cape Martin were grouped with them in Yakutat thought, although the Cape Martin people are said to have been originally an offshoot of those living in Controller Bay. Vague traditions suggest that the area between Cape Fairweather and Cross Sound may have been occupied by the same groups that lived at Dry Bay, though mixed with Tlingit of southeastern Alaskan derivation. In any case, this Lituya Bay region is now deserted, though claimed as hunting territory by a Tlingit sib of Hoonah, in southeastern Alaska. (Map 2.)

All of the Gulf of Alaska Indians are said to have been divided into exogamous matrilineal moieties (Raven and Eagle), like those of the Tlingit, and the legendary history of the area is told in the form of sib traditions. The interior Athabaskans—the Atna of the Copper River and the Southern Tutchone of the upper Yukon and Alsek Rivers—also have a similar social organization, and the Yakutat people felt that they were related to them through migration and intermarriage.

Excluding the Copper River Delta on the west and the Lituya Bay-Cape Spencer area on the southeast, the Gulf of Alaska may be divided into the following four districts, according to native thought:

(1) Controller Bay and the shore almost to the Icy Bay area is claimed by the Ǫałyıx̣-Kagwantan, an originally Eyak-speaking Eagle sib who settled at the Kaliakh River (from which the first part of their name is derived), after "the Flood." There is, however, strong evidence that a branch of Chugach Eskimo may have occupied, and certainly frequented, Controller Bay during the 18th century, until they were driven from it by the Tlingit or Tlingitized Eyak from the east. This is attested by Chugach and Copper River Eyak traditions, by Eskimo place names in Controller Bay, and by the observations of Steller and other 18th-century explorers (Birket-Smith and de Laguna, 1938, pp. 341–354; Birket-Smith, 1953, pp. 19, 20). Before their expansion westward, the Ǫałyıx̣-Kagwantan were presumably living between Cape Suckling and Cape Yakataga. The distribution of the Eyak language suggests, of course, that at a still earlier period the Indians lived in Controller Bay. The division into Copper River and Yakutat dialects may have been caused by the subsequent intrusion of the Eskimo. Indian tradition tells of Chugach raids on the village at the Kaliakh River, and even as far east as Yakutat Bay. The versions of some informants that Yakutat Bay was originally occupied by Eskimo may reflect Chugach occupation of Controller Bay and their warlike excursions into Yakutat territory, as well as the fact that skin boats, like those of the Chugach, were once used on Yakutat Bay.


146°
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58°
ATNA
COPPER RIVER
WHITE RIVER
YUKON RIVER
PELLY RIVER
SOUTHERN TUTCHONE
INLAND TLINGIT
KASKA
LIARD RIVER
TESLIN
TESLIN LAKE
TAGISH
TAGISH LAKE
ATLIN LAKE
ATLIN
TAHLTAN
EYAK
YAKUTAT BAY
YAKUTAT
ALSEK RIVER
DRY BAY
CHILKAT-CHILKOOT
TAKU RIVER
AUK
TAKU
COASTAL TLINGIT
HOONAH
ANGOON
SITKA
KAKE
STIKINE
STIKINE RIVER
NORTH

Map 2.—The Coastal and Inland Tlingit and their neighbors. Drawn by E. F. Chapman, under the direction of Catharine McClellan, with modifications by Frederica de Laguna. (From fig. 4, memoir 9, Society for American Archaeology, 1953.)

(2) Icy Bay, Yakutat Bay, and the coastal plain as far east as the site of the Yakutat airfield, but excluding Russell Fiord at the head of Yakutat Bay, compose the territory of the K^{w}ack̓qwan, a Raven sib who trace their origin to the middle Copper River near Chitina.

(3) The district from Lost River near the Yakutat airfield to just east of Italio River, including the head of Russell Fiord, belongs to the Teqwedi, a Tlingit Eagle sib from southeastern Alaska. The Bear House lineage owns the western area of Lost and Situk Rivers; the Drum House lineage claims the eastern lands on Ahɪnklin, Dangerous, and Italio Rivers.

(4) Akwe River and Dry Bay area belongs to the Tłuk^{w}aẋᴀdi, a formerly Athabaskan-speaking Raven sib, and to the Tł'ᴜknaẋᴀdi, a Raven sib from southeastern Alaska, with whom the remnants of the original inhabitants have merged. Also resident in the area, although they have never established full territorial claims, were the Eagle Tcukanedi, associated chiefly with Lituya Bay, and two other Eagle sibs from southeastern Alaska: the Kagwantan (proper) and the Cᴀnkuqedi. The latter came via an interior route from Lynn Canal, up the Chilkat and down the Alsek, and are said to have intermarried with the Southern Tutchone Athabaskans.

Although there were once many settlements in these regions, they are now deserted, and the population of about 250 to 300 natives is now concentrated in the modern town of Yakutat. Only a handful of Eyak are reported to be at Cordova, and the little tribe is almost culturally and linguistically extinct. Some of the Dry Bay and Lituya Bay people emigrated to Hoonah and Sitka. In 1880, there were 170 "Thlinket" in Controller Bay, 150 near Cape Yakataga, and 500 at Yakutat and on the mainland as far south as Cape Spencer (Petroff, 1884, pp. 29, 32), making a total of 820, if Petroff's figures are to be trusted. Although this count was taken after the disastrous smallpox epidemics, there is no reason to suppose that the Indian population on the Gulf Coast was ever very large.

The legendary history of Yakutat begins some "ten generations" ago, when the ancestors of the K^{w}ack̓qwan emigrated from Chitina on the Copper River because of an intrasib quarrel. At that time they spoke Atna Athabaskan, and are referred to as the Gɪneẋqwan or "people of Gɪneẋ" (Bremner River, an eastern tributary of the Copper River). The emigrants are said to have ascended this river and crossed the glaciers. Part of the group that became separated from the rest eventually became the G̣anᴀẋtedi Raven sib of the Eyak at the mouth of the Copper River. The main party traveled across the ice, past Mount Saint Elias, which they now claim as a crest, and reached the coast somewhere west of Icy Bay, which was then filled with ice. Here the Gɪnex̣qwan met and intermarried with some G̣ałyɪx̣-Kagwantan who were moving eastward by canoe.

The extensive icefields of Bagley and Bering (or Guyot?) Glaciers which the emigrants had to cross, as well as mountain ridges up to 5,000 feet high, might seem to present an insuperable barrier and so cast doubt not only upon this tradition, but also upon the report that copper from the interior was carried to the coast via a "shortcut" to the mouth of the Duktoth River at Cape Yakataga. Don J. Miller, of the U.S. Geological Survey, who knew this whole area thoroughly, assured us, however (letters of October 30 and December 6, 1957), that not only was the route possible, but that it had actually been followed by prospectors in the early 1900's on the basis of the Indian legend. The natives would have come up the Tana River (a southern tributary of the Chitina), up Granite Creek or Tana Glacier, and then over Bagley and Bering Glaciers, and down the Duktoth River to the coast. Miller furnished some details of the prospectors' journeys, the first of which were made in 1905 and 1906. Crossing the glaciers took from 3 days to almost 3 weeks. One of the men found a piece of split wood, 2 feet long, on a moraine (of Bering Glacier?), apparently left there by the Indians (cf. also Moffit, 1918, p. 77). Miller reports the ice along most of the route as "relatively smooth and little crevassed—really good traveling, as glaciers go."

Native accounts vary as to how long the G̣ɪnex̣qwan and their spouses stayed near Icy Bay, but eventually they came to Yakutat Bay, which was then largely covered by a glacier. They crossed the bay, walking over the ice according to some informants or using skin boats according to others. The islands in the bay and the eastern shore were already owned by a group or groups, variously identified as Chugach or as Indian. Our most knowledgeable informant called them the Hɪnyedi, a Raven sib (presumably Eyak-speaking), although there may have been other small tribes in the area. From them, the Copper River immigrants acquired by purchase the territory along the shores of Yakutat Bay, including the stream, Kʷack̓ ("Humpback Salmon" in Eyak), from which the sib takes its present name. Payment was made in copper which they had brought from the Copper River. After selling their lands, the Hɪnyedi are said to have emigrated to southeastern Alaska, although we suspect that some of them merged with the Kʷack̓qwan.

One group with hunting camps on Yakutat Bay and settlements along Lost and Situk Rivers to the east were called the Tłax̣ayik-("Yakutat Bay")-Teqwedi. They were an Eyak-speaking group closely related to, or possibly a branch of, the G̣ałyɪx̣-Kagwantan, and were responsible for the destruction of the Russian post at Yakutat in 1805. Slightly prior to this, the first of the Tlingit

Teqwedi from southeastern Alaska were marrying into the Yakutat Ravens. Shortly after 1805, the Tłax̣ayik-Teqwedi were nearly exterminated by Tlingit parties from Akwe River, and the survivors were apparently absorbed by the true Teqwedi. Another group, now extinct, were the Łux̣edi, also an Eagle sib, possibly a branch of the Tłax̣ayik-Teqwedi. Their name refers to the muddy water of the Situk River, which at that time drained the ice-dammed lake at what is now the head of Russell Fiord.

Meanwhile the Tlingit had been moving up from southeastern Alaska and were established in the Dry Bay area. This is reflected in the story of the man from the Hoonah district who taught Tlingit arts to the Dry Bay Athabaskans and who became rich by trading with them (see Swanton, 1909, Tales 32 and 104). The sibs that moved in at this time seem to have been the Kagwantan, Tł'ᴜknax̣ᴀdi, and Teqwedi, although some of the Bear House lineage of the last sib were already living near Yakutat. The Cᴀnkuqedi were presumably established by that time at Dry Bay through intermarriage with the local inhabitants. The Drum House branch of the Teqwedi purchased the Ahrnklin-Italio district from the Stax̣ᴀdi, a branch of the Hɪnyedi, and the Bear House lineage of the Teqwedi acquired the Situk-Lost River area by preemption. The latter were probably not secure in their holdings until the Tł'ᴜknax̣ᴀdi from Dry Bay, eager to get the Russian loot held by the Tłax̣ayik-Teqwedi, made war on the latter and nearly exterminated them.

The Tł'ᴜknax̣ᴀdi apparently did not enjoy their wealth for very long because they became embroiled in a war with one of the Chilkat Raven sibs. One of their war parties was lost when a number of their canoes capsized in Lituya Bay under mysterious circumstances. This occurred about 1850, and the disheartened relatives at Akwe River abandoned their town. Some moved to Hoonah and Sitka, and others came eventually to Yakutat.

More important than the many wars and intrasib quarrels as causes for the abandonment of settlements were the various epidemics, of which the smallpox epidemic of 1836-39 was the most disastrous. The establishment of a trading post, of the mission, and of the cannery concentrated the scattered population at the modern town of Yakutat early in the present century.

One of the most important legendary figures in the native history of Yakutat was X̣atgawet, a Tlingit Teqwedi of the Bear House lineage. He is said to have been born on the Akwe River and to have traveled all over, even as far west as Katalla, marrying the daughters of local chiefs and acquiring great wealth from the gifts customarily bestowed upon brothers- and sons-in-law. This is, of course, a device used by the Tlingit to establish profitable "trade" with the Athabaskans (Olson, 1936, p. 214). He is said to have "organized" the coastal groups and to have given them the names of Tlingit sibs, such as G̣anᴀx̣tedi, Kagwantan, and so on. He also gave the maximum number of eight potlatches, a feat not afterward equaled at Yakutat. All of these stories suggest that while the earlier inhabitants of the Gulf of Alaska may have had matrilineal sibs and moieties (perhaps rather loosely organized, like those of the Copper River Atna), it was the Tlingit immigrants to Yakutat who introduced the fully developed patterns of Tlingit social and ceremonial life. According to some informants, X̣atgawet was also a shaman and acquired one of his familiar spirits from a Tsimshian colleague, a story which suggests the northward diffusion of shamanistic practices.

Some informants say that X̣atgawet bought Knight Island for his G̣mex̣qwan wives and children, and that he assisted his brother-in-law in founding the village on that island and named it T'ᴜkwan, or Tł'ᴀkʷ-'an "Old Town," after the famous Chilkat village (Klukwan). Our best informant maintains, however, that X̣atgawet lived much later, after the Russians had been expelled. He is said to have been the grandfather of a woman who died shortly after 1900 and the great-grandfather of a woman who was born in 1874. Furthermore, it is denied that he had anything to do with Knight Island, but lived on Lost River. Giving him a post-Russian date would place him in the period in which Tlingit had replaced Eyak speech at Yakutat. It is possible that the traditions are confused because there were several persons with the same name. In any case, the first Tlingit trade with Yakutat antedated the visits of the first European explorers in the last quarter of the 18th century, for it was already well established at the time of the explorations of Ismailov and Bocharov to Yakutat in 1788, witness the arrogant behavior of the Tlingit chief, Yelx̣ak ("Ilchak"), from Chilkat (Shelikhov, 1793, pp. 228–229, 233–237; and *in* Coxe, 1803, pp. 324–325, 329–332).

There is no doubt that the fur trade in the late 18th and early 19th centuries stimulated the northward expansion of the Tlingit. Associated with the diffusion of Tlingit trading patterns and the Tlingit language, many other aspects of Tlingit culture must have been spread, probably including the style of potlatches, of peace ceremonies, and of shamanism and witchcraft. All of these would have been reflected in such items of material culture as the large multifamily lineage house with totemic crests on carved house posts and painted screens, and ceremonial regalia of all kinds. The Tlingit also introduced the Haida-derived style in secular songs, and shamans' spirit songs in Tsimshian. Tlingit trade also brought to the Yakutat people large canoes of southern manufacture (Haida and Nootka), Tsimshian-made dance headdresses, dentalia, abalone, and flat-headed slaves, in return for which the Yakutat traded their magnificent baskets, copper from the Copper River, and furs obtained locally or from their relatives in the interior or farther west along the Gulf Coast.

CONTACT WITH EUROPEANS

According to the natives, their first contact with Europeans occurred some time before the Russians established themselves at Yakutat. A ship was wrecked on the shore near Malaspina Glacier. Two men and a woman survived, but the men fell down a crevasse and only the woman was alive when the Indians found the wreck. The latter, through ignorance, spoiled most of the treasures they took from the ship. Thus, they put the guns into a fire and pounded up the barrels with stones to make spears. They could work iron because they already knew how to shape copper. At that time an iron spear point was worth a slave, and so the men became rich. One of them married the White woman, who lived to old age.

From written sources we may infer that the first direct contact between the Gulf of Alaska Indians and the Russians was in 1783 when Potap Zaikov led an exploring party into Prince William Sound and Controller Bay. Other hunting parties, consisting of several hundred Aleuts and four or five Russians, apparently went down the coast, perhaps as far as Lituya Bay, but of these we have no details. Lituya Bay was visited by LaPérouse in 1786, where he met natives who may be taken as typical of the expanding northern Tlingit. The Indians there had iron tools and beads. One of our informants told about the coming of the first ship to Lituya Bay, and a fuller version was obtained by Emmons (1911) from a chief at Douglas or Juneau.

Dixon visited Yakutat in 1787, and the following year Ismailov and Bocharov explored Controller, Yakutat, and Lituya Bays, as reported by Shelikhov, and Colnett also traded with the natives in Controller and Yakutat Bays and in inlets farther southeast. In 1788, Douglass anchored off the Ahrnklin and Dangerous Rivers, or off Dry Bay, where he traded with the natives, but he failed to discover an anchorage in Yakutat Bay. Malaspina's more thorough exploration of Yakutat Bay was made in 1791. Brown traded in this area in 1792, 1793, and 1794. In 1793 a war party from Yakutat went to attack the Chugach in Prince William Sound, but, to their misfortune, fell in with Baranov and were defeated. That same year the Russians sent a party of Aleuts to Yakutat under the leadership of Shields, and in 1794 a large flotilla of bidarkas under Purtov and Kulikalov. This party met Lieutenant Puget with one of Vancouver's ships (the *Chatham*) at Yakutat, and also the English trader, Brown, in the *Jackall*.

The Russian post at Yakutat (actually on a lagoon inside the southeast point of the bay) was begun in 1795 and fortified the following year. In 1800 a second post, or blockhouse, was built on Monti Bay, near the present mission or near the entrance to the Ankau lagoons where the first post was located. In 1802 the Indians attacked an Aleut hunting party at Dry Bay and accused the Russians of robbing graves, a charge which is still remembered. Our informants also listed other grievances: the failure of the Russians to pay for the land they occupied; closing the stream (with a fish weir?) between the Ankau lagoons and Summit Lake to the east, which seriously interfered with the natives' supply of fish; taking children with promises to educate them but actually using them as slaves; and, lastly, appropriating native women at their pleasure. As a result, the Russian post was finally destroyed in 1805, and all but a few of the occupants were killed. The same year the Yakutat again invaded Prince William Sound, but this war party was annihilated by the Chugach. (For the Chugach version, see Birket-Smith, 1953, pp. 141 f.)

In 1806 Campbell rescued an Aleut man and his wife whom the Yakutat had captured, and took two Indians to Kodiak as hostages. Our informants also told how the Tłax̣ayik-Teqwedi leader of the attack on the Russian fort was taken to Kodiak. It was not until the following year, however, that the widow and children of the Russian commander were liberated, together with a few other survivors.

After this a period followed in which there were few close contacts with Europeans, except when trading parties went from Yakutat to Nuchek in Prince William Sound, or to Sitka, or even to Prince Rupert and other distant, southern trading posts. We have few records of European visitors to Yakutat until about 1880, except for the Russian cartographers, Boolingin in 1807 and Khromchenko in 1823, the British navigator, Belcher, in 1837, and the U.S. Coast Survey in 1874. Although the ocean off the coast was a famous whaling ground, vessels seldom put in to shore.

The first American traders began to appear at Yakutat shortly before 1880. At that time, a White man was killed and his Indian slayer taken to Portland on a gunboat. Later, the U.S.S. *Adams* landed a party of prospectors at Yakutat, and between 1883 and 1886 there were goldminers working the black sands of Khantaak Island and the ocean beach. Trading schooners began to call regularly, and parties attempting to climb Mount Saint Elias stopped at Yakutat to recruit porters with almost equal regularity. A Dr. Ballou ran a trading post where the mission is now located. During this same period, parties of Tsimshian and Tlingit from southeastern Alaska came to hunt seals in Yakutat Bay and sea otters in Icy Bay. The mission was established in 1888, the "Old Village" at Yakutat was founded shortly afterward, and the cannery was built in 1904.

THE YAKUTAT AREA

By Frederica de Laguna

GEOGRAPHY

The region in which our archeological investigations were pursued includes Yakutat Bay and the coastal plain to the southeast as far as Dry Bay. Yakutat Bay has its entrance between Point Manby (59° 41′ N., 140° 19′ W.) and Ocean Cape (59° 32′ N., 139° 51′ W.), where it is 16 miles wide. It extends northeastward about 33 miles, narrowing to a width of 3 miles or less, then turns southeastward toward the ocean for a distance of 28 miles. The coastal plain between Yakutat and Dry Bays is about 50 miles long, and from 5 to 14 miles wide between the open Gulf of Alaska and the snow-covered peaks of the Saint Elias Range.

The southern shores of Yakutat Bay, including the chain of islands (Khantaak to Knight Islands) along its eastern edge, and the foreshores northwest and southeast of the bay, are all low-lying terrain, less than 250 feet above sea level. Most of this land is composed of alluvial gravels, sands, and silts, and is studded with lakes and swamps. The western shore of the bay is covered by the terminal moraine of Malaspina Glacier, and similar outwash deposits are found along the opposite shore. All of the permanent native settlements are in these lowland areas. (See numbered sites on map 3.)

Steep rocky shores are encountered at Eleanor Cove, on the eastern side of Yakutat Bay near Knight Island, about 15 miles above the mouth of the bay, and on Bancas Point to the northwest. Here the land rises sharply to altitudes of over 4,000 feet, leaving only small areas at the mouths of streams where the natives camp in the spring when fishing for halibut or hunting bears and seals.

Disenchantment Bay, the "heart" of Yakutat Bay, north of Point Latouche and Bancas Point, is filled with floating ice discharged from the glaciers that descend to tidewater from the high mountains of the Saint Elias Range, here over 14,000 and 15,000 feet in elevation. These icy waters are the principal seal-hunting areas of the region, and the natives also gather sea gull eggs from the rocky cliffs of Haenke ("Egg") Island in Disenchantment Bay.

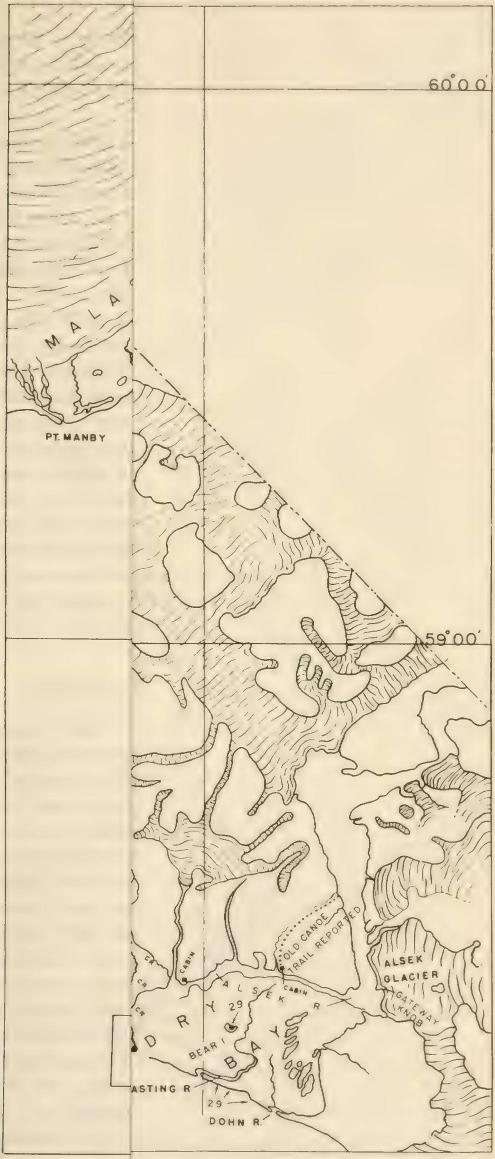
From Disenchantment Bay, Russell Fiord continues southeast for about 10 miles, where it sends out to the west a 7-mile-long arm, Nunatak Fiord, at the head of which is another glacier. The bare slopes above Russell and Nunatak Fiords were formerly hunting grounds for mountain goats. From Nunatak Fiord, Russell Fiord turns southward, extending so far that its head, "Mud Bay," protrudes into the coastal plain only 14 miles from the ocean.

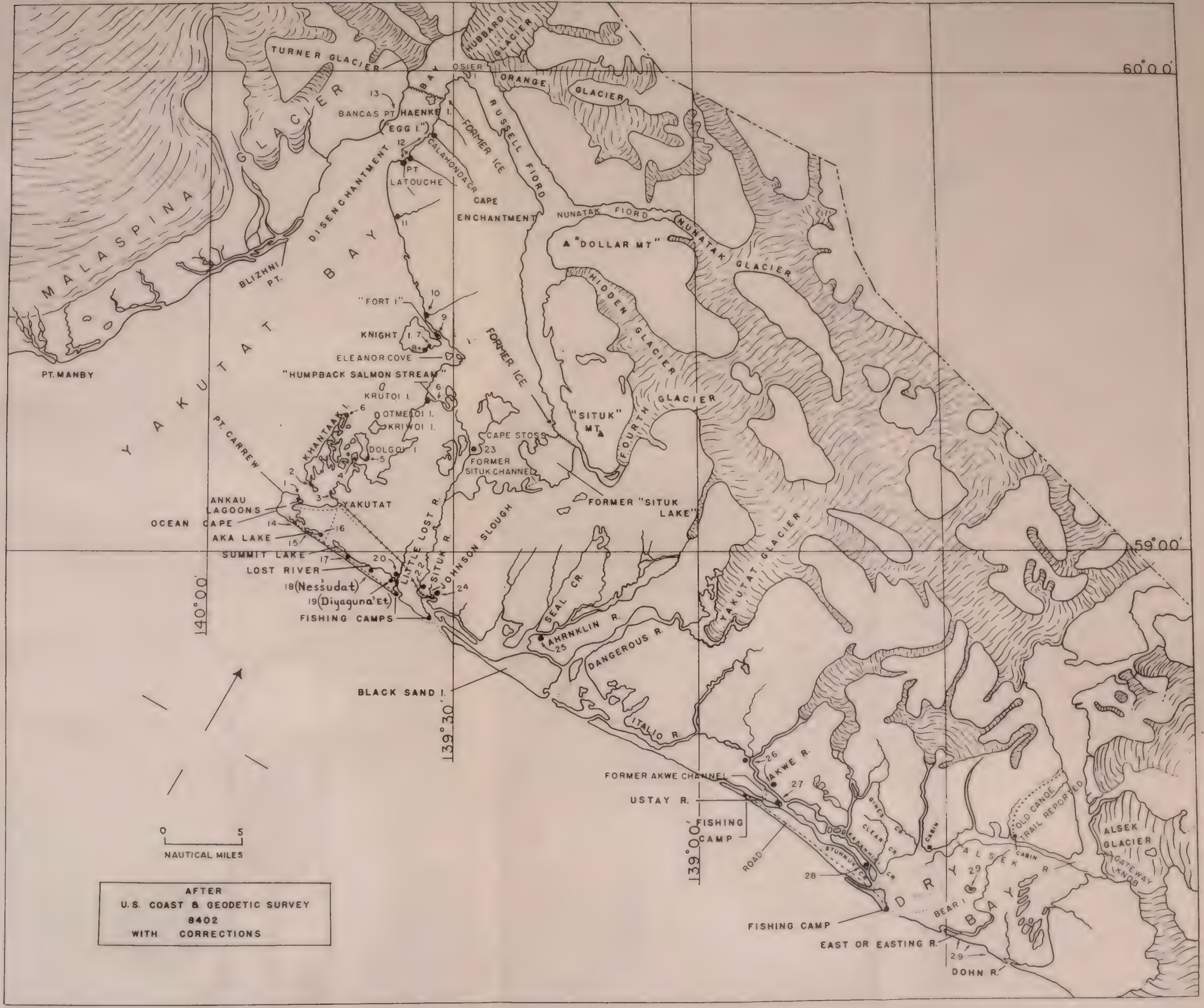
The Alsek River rises in Yukon Territory close to the headwaters of the Yukon, Tanana, and Chilkat Rivers, and cuts through the high barrier of the Saint Elias-Fairweather Range to reach the sea at Dry Bay. The mudflats at the mouth, about 10 miles wide, are covered only at high tide. Formerly there were a number of villages or camps on the lower Alsek and at the mouths of smaller streams and sloughs that enter Dry Bay. Until fairly recently the Dry Bay people used to ascend the Alsek to hunt, fish, gather berries, and trade with their interior neighbors and relatives, while the Southern Tutchone of the upper Alsek used to visit Dry Bay. Interior trails connected the settlements of the Southern Tutchone with those of the Interior Tlingit around Tagish Lake and with the villages of the Chilkat Tlingit on Lynn Canal.

A chain of sloughs, streams, lakes, and salt-water lagoons until recently provided an inland waterway for canoes going between Yakutat and Dry Bay, although some portages were necessary. It was on these streams and lakes that most of the earlier settlements were located, and here the natives obtained their supplies of salmon. Until 1875 or 1880 there were few permanent houses on Yakutat Bay itself; the most important village site was Old Town on the southern point of Knight Island.

The eastern shore of Yakutat Bay as far north as Point Latouche, a distance of about 23 miles, is heavily timbered with spruce and hemlock. The former provided the natives with most of the wood used for houses, boats, and implements, while the sweet inner bark of the hemlock was used for food. In addition, cedar drift logs were sometimes found on the ocean beach and utilized. Dense stands of trees extend in narrow belts parallel to the ocean, but most of the plain between Yakutat Bay and Dry Bay is open country. The natives complain that the trees have recently been encroaching on areas where they used to gather strawberries, salmonberries, blueberries, highbush cranberries, elderberries, Kamchatka lilies ("wildrice"), wildcelery, wild "rhubarb," and "Indian-potatoes," as well as a variety of medicinal plants. Also there is a tradition that originally there were no trees on the islands in Yakutat Bay, and that even as late as 1850 or 1860 Krutoi Island was not wooded.

The Yakutat area enjoys a fairly equable climate, since the thermometer rarely drops below zero or rises to 80; but there is very heavy precipitation, averaging about 130 inches a year. Over 4 feet of snow may accumulate at one time on level ground, and mountainous


60°0 0'
MALA
PT. MANBY
59°00'
OLD CANOE TRAIL REPORTED
CABIN
CABIN
CR
CR
CR
ALSEK R
D R Y B A Y
29
BEAR I
ASTING R
29
DOHN R.
ALSEK GLACIER
GATEWAY KNOB



TURNER GLACIER
HUBBARD GLACIER
OSIER I.
ORANGE GLACIER
60°00'
13
BANCAS PT.
HAENKE I.
"EGG I."
12
PT LATOUCHE
CALAHONDA CR.
FORMER ICE
RUSSELL FIORD
CAPE ENCHANTMENT
NUNATAK FIORD
NUNATAK GLACIER
MALASPINA GLACIER
DISENCHANTMENT BAY
11
▲"DOLLAR MT"
HIDDEN GLACIER
BLIZHNI PT.
"FORT I"
10
9
KNIGHT I. 7
8
ELEANOR COVE
"HUMPBACK SALMON STREAM"
6
KRUTOI I.
OTMELOI I.
KRIWOI I.
KHANTAAK I.
6
DOLGOI I.
5
PT. MANBY
YAKUTAT BAY
PT. CARREW
FORMER ICE
FOURTH GLACIER
"SITUK" MT ▲
CAPE STOSS
23
FORMER SITUK CHANNEL
FORMER "SITUK LAKE"
2
1
3
YAKUTAT
ANKAU LAGOONS
OCEAN CAPE
14
AKA LAKE
16
15
SUMMIT LAKE
17
20
LOST RIVER
LITTLE LOST R.
SITUK R.
JOHNSON SLOUGH
21
22
18 (Nessudat)
19 (Diyaguna'Et)
24
FISHING CAMPS
140°00'
SEAL CR.
AHRNKLIN R.
25
DANGEROUS R.
YAKUTAT GLACIER
59°00'
BLACK SAND I.
139°30'
ITALIO R.
26
AKWE R.
FORMER AKWE CHANNEL
27
USTAY R.
FISHING CAMP
139°00'
ROAD
GINES CR.
CLEAR CR.
CABIN
KAKANHIN CR.
STUMNUK CR.
28
ALSEK R.
29
CABIN
OLD CANOE TRAIL REPORTED
ALSEK GLACIER
GATEWAY KNOB
DRY BAY
BEAR I.
FISHING CAMP
EAST OR EASTING R.
29
DOHN R.
0 5
NAUTICAL MILES
AFTER
U.S. COAST & GEODETIC SURVEY
8402
WITH CORRECTIONS

Map 3.—Sites in the Yakutat Bay-Dry Bay area. Drawn by Donald F. McGeein.

693-818 O-64 (Face p. 14)

drifts form in the forest in winter. Most of the offshore winds blow from the south and east, but on land there are often storm winds from the mountains to the north. The tidal range at Yakutat is about 10 feet.

The most important animals of the area that were utilized for food or skins were: fur seal, harbor seal, sea otter, porpoise, sea lion, whale (eaten when found stranded), black bear, brown grizzly, land otter (until recently avoided as supernaturally dangerous), mountain goat, wolf, fox, wolverine, beaver, muskrat, and marmot. Moose, rabbit, and deer have come or been introduced into the area during the present century. The most valuable fish are the salmon—king, sockeye, humpback, and coho, to list them in the order of their runs; there are also halibut, eulachon, herring, steelhead, etc. Bird life is particularly abundant, especially in the Ankau system of streams, lakes, and lagoons between Ocean Cape and Lost River. The most significant for the natives were swans, geese, salt- and fresh-water ducks, terns, gulls, and other aquatic birds. Cockles, clams, mussels, chitons, crabs, and sea urchins were gathered in the sheltered waters along the eastern part of the bay or in the salt lagoons of the Ankau area. Edible seaweed was obtained on rocky points off Ocean Cape or on the outer shores of the islands.

Icy Bay was an important area for hunting mountain goat, seal, and sea otter, and the G̣ałyıx̣-Kagwantan territory west of Cape Yakataga was noted for its fur bearers, especially beaver and sea otter.

GEOLOGICAL CHANGES

There have been a number of geological changes in the Yakutat Bay region since it was first settled, and recently discovered evidence of these changes (Plafker and Miller, 1958) have tended to confirm native traditions (de Laguna, 1958). The whole area was probably buried under ice during the Pleistocene, and while human occupation may have been possible during the recession which followed the Wisconsin glacial period, we have no evidence of it. After this, there was another advance of the ice, so that Malaspina Glacier and the two lobes that filled Icy Bay and Yakutat Bay formed a continuous front of ice along the sea. The coastal plain east of Yakutat Bay and west of Icy Bay was apparently unglaciated. The eastern edge of the glacier filling Yakutat Bay ran northeastward from Ocean Cape, covering the area around Lake Redfield, and a smaller ice lobe extended south from the head of Russell Fiord, although the land around Lost and Situk Rivers was not glaciated (Tarr, 1909, map p. 106; Plafker and Miller, 1958). The culmination of the glacial advance in Icy Bay was roughly between A.D. 600 and 920 (A.D. 756 ± 160 years), and in Yakutat Bay was between A.D. 970 and 1290 (A.D. 1127 ± 160 years), according to radiocarbon dates obtained from wood in end moraines near Icy Cape and Ocean Cape (Plafker and Miller, 1958). During the subsequent recession, the ice retreated as far as or even farther than the present glacial fronts, permitting the growth of trees well behind the present timberline in Icy Bay, in Russell Fiord, and in Disenchantment Bay. This retreat began somewhat before A.D. 1400, to judge from the age of living trees near Yakutat. These geological changes are further discussed on pages 204–206.

Native traditions seem to imply that this recession was in progress when the ancestors of the Kʷack̓qwan came from the Copper River; in fact they are said to have caused it by throwing a dead dog down a crevasse. Icy Bay was then completely filled with ice, and the immigrants crossed Yakutat Bay on the glacier that extended from Point Manby on the west to Eleanor Cove on the east. The native name for Yakutat Bay, *Tłax̣ayik,* is derived from the Eyak *tła'* (glacier), *x̣a'* (near), plus the Tlingit suffix *-yik* (place inside). The glacier was melting back, exposing the bay, and Yakutat, *yakʷdat,* is supposed to be an Eyak expression meaning "a lagoon (or bay) is already forming."

It was presumably during this same recession that a village was founded on Guyot Bay, just inside the northwest point of Icy Bay. It was eventually overwhelmed by a readvance of the ice, which culminated during the 18th century. Tarr and Martin (1914, pp. 46 f.) quoted a version of this tradition, recorded by Topham in 1888, and believed that the glacial advance took place between 1837 when Belcher sailed into Icy Bay and 1886 when Schwatka saw a solid wall of ice in the bay. Plafker and Miller (1958) have advanced convincing evidence that the "Icy Bay" of the explorers from Vancouver to Schwatka was really the former outlet of the Yahtse River, east of the present Icy Bay, and that the latter was already full of ice by 1790. Malaspina Glacier probably advanced at the same time as the glaciers in Icy and Yakutat Bays. A radiocarbon date of wood from its moraine indicates that the climax of the advance was about A.D. 1750 ± 150 years. The advance in the Yakutat area was much less extreme and affected only the glaciers in Disenchantment Bay and Russell Fiord. The maximum extent of the ice in Yakutat Bay may have been to Blizhni Point and to a corresponding locality on the eastern shore, midway between Knight Island and Point Latouche (Plafker and Miller, 1958).

Although the glaciers were already in retreat by 1791, Malaspina was stopped in June of that year by ice that filled Disenchantment Bay as far south as Haenke Island. Tarr (1909, p. 20) believed that this was only floating ice; if so, glacial conditions may not have been very different from those of today. Even now floating ice in early summer may prevent travel above Haenke Island, and we have seen bergs drifting down to Knight Island. On the other hand, there has, in general, been a great retreat of glaciers near Yakutat since the 18th century, and other geologists (Russell 1892, p. 172; Tarr and Martin, 1914, pp. 108 f.; Plafker and Miller, 1958) believe that Malaspina encountered a solid wall of glacial ice in the vicinity of Haenke Island.

The natives told us that before they had guns (which they did not acquire until the end of the 18th century), they were unable to camp above Point Latouche because of the floating ice. The main sealing camp was then 3 miles south of the point, at a place called Tłax̣ata, an Eyak word referring to the proximity of the glacier. In the early 19th century, after the destruction of the Russian post in 1805, the natives made a fortified camp at Wuganiỵᴇ, about 2½ miles above the point. At the end of the century the sealing camps just above Point Latouche were great centers (Grinnell, 1901, pp. 158–165). Remarks made by some informants suggest, however, that there may have been a period in the middle of the century when these places were little used because of the ice.

Until the middle of the last century, Russell Fiord was blocked by glaciers which dammed up a fresh-water lake at the southern end of the fiord. This barrier, undoubtedly due to the 18th-century advance, extended from Beasley Creek to Cape Stoss. The name for the latter was an Eyak word, meaning "it has the glacier in its mouth." This lake was drained by the Situk River (see Tebenkov, 1852, chart vii; Davidson, 1904, map vi). At that time it was possible to travel by canoe from the lake, through a series of lakes and streams, to Yakutat Bay just below Knight Island. The ice barrier broke some time between 1850 and 1875, according to our informants, when the dammed-up lake waters were discharged into Russell Fiord, reducing the Situk River to a small stream. Tarr and Martin (1914, p. 230) estimate that the vegetation on the old lake beach at the head of Russell Fiord was not over 50 years old in 1909–13. This change in the size of the river must have affected adversely any settlements on the upper Situk, where a fortified village had been built shortly after 1805. We do not know, however, whether any attempt was made to reoccupy this site after the original owners, the Tłax̣ayik-Teqwedi, were massacred at their camp at Wuganiyᴇ.

Native tradition also refers to a breaking of a glacier bridge across the Alsek River probably about the same time or toward the end of the century. Prior to this, the river had flowed out under a tunnel of ice. The Tłukʷax̣ʌdi from Dry Bay, when making their annual trips to the interior, had to carry their canoes overland through a gorge on the west side of the river in order to bypass the glacier, and on their return downstream would paddle fearfully under the ice. The collapse of the ice is said to have created a great flood that drowned many people in Dry Bay. There were also ice-dammed lakes formed at the headwaters of the Alsek River, and a Southern Tutchone informant reported that his mother had twice seen the ice break and the water rush out in a flood, the first occurrence being about 1842, according to his estimate.

Retreat of the Icy Bay glacier did not begin until about 1904 (Plafker and Miller, 1958). Our informants said that this was because a dead Tsimshian sea otter hunter had been eviscerated (to preserve his body) and his entrails buried at Guyot Bay ("Tsimshian Bay"), just inside the northwest point of Icy Bay. This happening was evidently after 1890 and before the death of Yakutat Chief George in 1903.

Although we have no Yakutat traditions concerning the topography at Lituya Bay, Tarr and Martin (1914, p. 10) estimate that the glaciers advanced about 3 to 3½ miles between 1786, the time of LaPérouse's visit, and 1906. About 1850 a flotilla of canoes, said to have come from the Akwe River, were overturned in Lituya Bay and all the occupants drowned. Possibly this disaster was caused by giant flood waves, evidence of which could be dated at 1853 or 1854 through a ring count of trees that had sprung up on the devastated area (Miller, 1960, pp. 67 f.).

Still farther south, the ice in Glacier Bay on the north shore of Cross Sound has retreated about 55 miles since the latter part of the 18th century. Prior to that, there was a long period of recession when the glaciers were even smaller than they are now (Field, 1932, p. 371). The advance of the ice which destroyed a Tlingit town in this area recorded in one story by Swanton (1909, pp. 337 f.) may be the movement of the ice to its maximum extension in the 18th century.

A very important recent geological event was the Yakutat earthquake, which lasted for 3 weeks during September 1899. Although the center of this disturbance was 15 to 30 miles up the bay, waves washed away the native graveyard at Point Turner on Khantaak Island and threatened the mission at Yakutat. Avalanches fell all along the shore between Knight Island and Point Latouche, and giant waves in this area destroyed forests over 40 feet above sea level. The earthquake also produced considerable changes in sea level, although apparently not at Yakutat itself or on the foreland to the east. At the extreme western end of Phipps Peninsula there was subsidence of 7 feet, and some stretches of shore north of Knight Island were similarly depressed. Other areas along the eastern shore were raised from 1 to 7 feet; Haenke Island rose 17 to 19 feet, and the west side of Disenchantment Bay reached a maximum elevation of 47 feet. The axis of tilting ran directly through the village site of Old Town on Knight Island, but fortunately the main portion of the site was not damaged. The effects of the earthquake are described by Tarr and Martin (1906).

Tarr and Martin (1906, pp. 52 ff.) believe that there had been previous changes of sea level, and they cite raised beaches now covered with forests on Krutoi and Otmeloi Islands, and an elevated beach south of Point Latouche (and Tlax̣ata) with trees only 75 years old in 1906. We observed similar old beach lines on the south point of Knight Island. In fact, according to Don J. Miller (letter of October 9, 1957), there is evidence of very recent emergence of land areas, from beneath both the sea and the ice, all the way from Copper River to Icy Point beyond Lituya Bay.

The earthquake of 1899 is credited with shaking down so much snow on the glaciers in the Yakutat area that the latter were stimulated to renewed activity between 1905 and 1910 (Tarr and Martin, 1914, p. 37). Since then most of them have been in retreat, except that we observed that Turner Glacier in Disenchantment Bay had recently advanced farther south and east of the position shown on the U.S. Coast and Geodetic Survey chart No. 8455 (1945, 5th ed., chart of 1901). This observation was confirmed by the natives, who said that they no longer dare to camp on Osier Island nearby because of the danger of waves from calving bergs.

Other recent changes in the Yakutat Bay area have been the drying up or shallowing of the sloughs connecting the Ankau lagoons with Lost and Situk Rivers, and shifts in the sandbars at the mouths of the Situk and Ahrnklin Rivers that have resulted in some disturbances of the salmon runs.

On July 9, 1958, Yakutat again felt the effects of a severe earthquake, when waves drowned three persons on Khantaak Island. The southwest end of the island near Point Turner was, according to reports, "lifted forty to fifty feet in the air[!]" and then submerged (New York Times, July 10, 1958). My local correspondents do not make clear whether the old village site on the island was affected. At the same time, a landslide in Lituya Bay raised giant waves which denuded the mountain slope near the head of the bay to the prodigious height of 1,720 feet. All the shores of the bay were lashed by waves that stripped them of vegetation and that overrode the three habitation sites near the mouth visited by LaPérouse in 1786. Trim lines in the forest growth indicate that similar giant waves, but of lesser extent, had previously devastated the shores of the bay: in late 1853 or early 1854 (although no major earthquake was reported), about 1874, in 1899 (probably associated with the Yakutat quake), and in 1936 (caused by a landslide) (Miller, 1960). Native traditions recount the complete obliteration of a village near the mouth of the bay, from which the only survivors were the men who had been out hunting sea otters and a lone woman who had been picking berries on the hills (Williams, 1952, p. 137). Possibly it was *this* village, and not that on the Akwe near Dry Bay, which our informants should have associated with the Lituya Bay drownings, since the mourning song commemorating the tragedy is supposed to have been composed by a woman who actually saw her relatives drown. Probably the Akwe village, occupied by the same or related sibs, was deserted about the same time, leading to an association of the two events. Although there had been no great waves in the bay for some time prior to 1786, in the opinion of Miller (1960, p. 56), who studied these phenomena, the Tlingit were well acquainted with the treacherous character of the bay, as evidenced by the traditions recorded by Emmons (1911). The dangers they feared were probably something more than ordinary storms or tide rips at the entrance.

The whole southern part of Alaska is subject to seismic activity, and there were probably other earth movements which may have affected former village sites, but of which we have no direct or clear evidence.

SETTLEMENTS ON YAKUTAT BAY

A number of former villages or camps within the Yakutat Bay area were reported by our informants, but we were able to investigate only a few of these sites. The available information about them is summarized below. Unfortunately the early explorers are not very definite or specific about the location or nature of the native habitations they saw. Probably Colnett (MS., 1788) was correct when he estimated that the 200 natives he met at "Foggy Harbour," or Port Mulgrave, had their homes to the southeast and came to Yakutat Bay only to hunt, fish, or trade. He believed the huts he saw were only temporary summer dwellings. It is to be noted also that Beresford with Dixon in 1787 (1789, p. 169) noted "several huts scattered here and there in various parts of the sound." Malaspina in 1791 seems to have found a village on or near Port Mulgrave, that is Khantaak Island, but does not indicate its location on his chart (1802; 1885, p. 156), although the latter shows the cemetery inside Ankau Creek, on the north shore, near the site of the present Alaska Native Brotherhood Cemetery.

1. On Ankau Creek, in the vicinity of the cemetery mentioned above, there was evidently a village, according to Dixon's chart of 1787. The grave monuments which he and Malaspina describe evidently stood nearby. Vancouver in 1794 (1801, vol. 5, p. 396) also noted a village about 2 miles "within cape Phipps." This site

was only half remembered by one of our informants. We searched for it without success. (For sites 1–6, 14–17, cf. map 4.)

2. The village on Port Mulgrave, Khantaak Island, was called Š̓uškᴀ. The modern village, remembered by our informants from the 1880's, was perhaps founded in 1875–80 to take advantage of the visits of trading schooners, but was located at the same spot indicated on Dixon's map of 1787. This village was abandoned by 1893. Excavation is impossible because the whole site is covered by a graveyard.

3. The "Old Village" of Yakutat, about three-fourths of a mile north of the cannery, was founded about 1889 when the mission was built nearby. It is still occupied, although most families moved to the present town of Yakutat in 1919 to build permanent homes near the cannery that had been established in 1904. Part of the lowland where the original houses stood at the Old Village has been washed away.

4. Sites were reported on both sides of Canoe Pass, a channel leading east from Johnstone Passage, but we were able to find only a very small shell heap on the island forming the north side of the pass. The deposit consisted of 3 inches of humus, 12 inches of stones, ash, and shells, and 7 inches of concentrated shells (clam, cockle, mussel, and sea urchin) at the bottom, forming a total depth of 22 inches. Only a cut bird bone (C/3), a rectangular slab whetstone of shale (C/2), and a quartzite hammerstone (C/1) were found, which gave no clue to the age of the site.

5. Although a former village site was reported on the east side of Dolgoi Island, we were unable to locate it. However, a site was discovered near the mouth of a small stream on the south end of the island, about 100 feet from the beach. The site is perhaps 300 feet long and 100 feet wide. Where tested, the deposit consisted of sticky black soil and fire-cracked rocks, only 6 to 10 inches deep, and contained a cobble hammerstone (D/2) and a ground slate tool (D/1). That the site may be of considerable age is the fact that a huge tree, fallen in 1952, once grew on the cultural deposit.

6. Various former camping places were reported on the north end of Khantaak Island, on "Crab Island" nearby, on Krutoi Island, and at the mouth of Humpback Salmon Creek opposite Krutoi Island. Some of these camps were mentioned in stories of Chugach raids, but the site at the stream was said to have been occupied by the Hɪnyedi, the original owners of the area. An unsuccessful search was made for it. We also failed to locate the settlement on the north end of Khantaak Island, although it is marked on Dixon's chart near the location of a White man's home which we visited.

7. The important site Tł'ᴀkʷ-'an or "Old Town," on the southern tip of Knight Island, was reported to have been originally settled before the Russians came, but informants differed as to whether

it was first a Hɪnyedi or a Chugach camp, or a Kʷack̓qwan village. There is also uncertainty as to why or when it was abandoned. In 1791, Malaspina (1885, p. 164) noted grave monuments here or in the vicinity, similar to those at Ankau Creek. Since Russian days it has been used as a camping place, and a White man has a cabin nearby. It was here that our archeological work was concentrated; a full discussion and description of the site is given later.

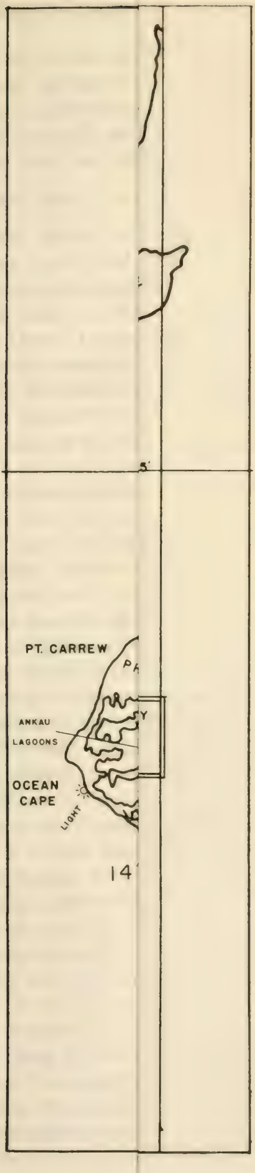
8. Another site was reported at the mouth of a stream about half a mile east of Old Town on the south shore of Knight Island. A White man and his native wife now live here. We could find no trace of the site. (Numbers for sites 7 and 8 are transposed on map 3.)

9. The small rocky island close to the mainland east of Knight Island is called "Little Fort" in Tlingit (pl. 1, *a*). It is supposed to have been fortified "in the days of Ẋatgawet" as a protection against Chugach raids. In the clearing on top of the island the outlines of the fort walls are preserved, and they confirm native traditions that the foundations of fortifications were often of stone. The walls of rough cobblestones can be traced for a distance of about 70 feet along the east side, and seem to enclose a rectangular area, 112 by 225 feet, within which shelters of some kind were presumably built. In a 6-inch cultural deposit of dark-brown rocky soil, outside the east wall, a piece of copper, probably a knife (ulo) blade, was found (F/1). The island would now be hard to defend, but it had more precipitous sides before it was elevated about 12½ feet during the earthquake of 1899.

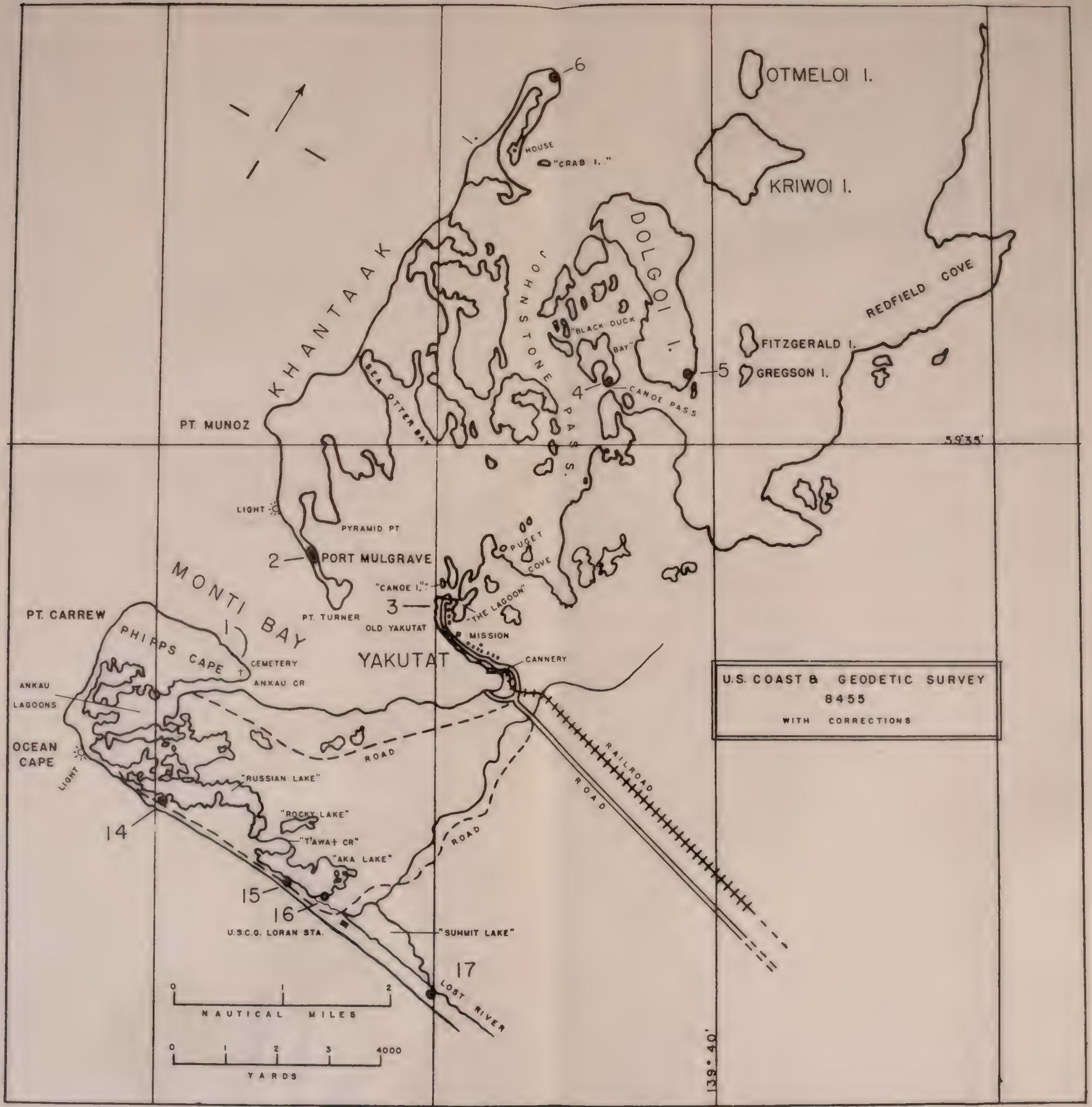
10. A former Chugach (?) camp was reported at the mouth of the stream opposite the north end of Knight Island, but was not visited. The land here rose about 5½ feet during the earthquake.

11. The old sealing camp, Tłaẋata, is said to be back in the woods on the north bank of the large stream about 3½ miles below Point Latouche. We were unable to land there. Malaspina (1885, pp. 162–164) found natives camped here in early July 1791.

12. Three sealing camps used in post-Russian times, and described by Grinnell (1901, pp. 158–165), were at the mouths of streams approximately 1¼, 2¼, and 3½ miles above Point Latouche. They were called, respectively, "Burned Down" (in Eyak), Wuganiyᴇ (meaning the same in Tlingit), and "Big Valley" (in Tlingit). Wuganiyᴇ was said to have been surrounded by a stone wall with loopholes for guns, but the Tłaẋayik-Teqwedi defenders were massacred by the Tlingit Tł'ᴜknaẋᴀdi from Dry Bay. Although this place was visited in May 1954, the snow was too deep to permit exploration. The three camps were visited by the Harriman Alaska Expedition in the spring of 1899, when they were occupied by 300 to 400 natives from Yakutat, Sitka, and Juneau. During the earth-


5'
PT. CARREW
ANKAU
LAGOONS
OCEAN
CAPE
LIGHT
14

693–818 O–64 (Fame p. 22)


6
OTMELOI I.
HOUSE
"CRAB I."
KRIWOI I.
I.
KHANTAAK
JOHNSTONE PASS
DOLGOI I.
REDFIELD COVE
"BLACK DUCK BAY"
FITZGERALD I.
GREGSON I.
5
4
CANOE PASS
SEA OTTER BAY
PT. MUNOZ
59°35'
LIGHT
PYRAMID PT
PUGET COVE
2
PORT MULGRAVE
MONTI BAY
"CANOE I."
3
"THE LAGOON"
PT. CARREW
PT. TURNER
OLD YAKUTAT
MISSION
1
PHIPPS CAPE
CEMETERY
ANKAU CR
YAKUTAT
CANNERY
U.S. COAST & GEODETIC SURVEY
8455
WITH CORRECTIONS
ANKAU
LAGOONS
OCEAN
CAPE
LIGHT
ROAD
RAILROAD
ROAD
"RUSSIAN LAKE"
"ROCKY LAKE"
14
"T'AWAɫ CR"
"AKA LAKE"
ROAD
15
16
U.S.C.G. LORAN STA.
"SUMMIT LAKE"
17
LOST RIVER
0
1
2
NAUTICAL MILES
0
1
2
3
4000
YARDS
139° 40'

Map 4.—Sites in southeastern Yakutat Bay. Drawn by Donald F. McGeein.

quake that fall, the shore was elevated from 7½ to 12 feet. Modern camping places are on the south shore of Haenke Island where a flat was raised above sea level by the quake, and on the mainland opposite.

13. The Tłax̣ayik-Teqwedi are said to have had a camp on high ground near Bancas Point on the west side of the Bay.

SETTLEMENTS IN THE ANKAU AREA

The Ankau lagoon system of Phipps Peninsula is entered from Monti Bay via Ankau Creek, and consists of several salt-water lagoons and lakes. These are connected by streams with Rocky Lake, Aka Lake, and Summit Lake to the southeast. From Summit Lake, near the U.S. Coast Guard Loran Station, Lost River flows southeastward to enter the ocean about 11 miles from Ocean Cape.

14. The site of the Russian post, Nova Rossiysk, ("New Russia") (1796–1805), was on the narrowest part of the barrier beach between the ocean and the largest of the Ankau lagoons ("Russian Lake"). It is supposed to have contained "seven buildings defended by a stockade, and five others outside" (Dall and Baker, 1883, p. 207; see also Tebenkov's map vii, 1852). Although we visited this spot several times with native guides, we were unable to find any trace of the fort. An Indian had a fishing camp and smokehouse at this spot; the ocean has evidently washed away much of the land. The natives also reported that the Russians fortified a small island in the lagoon and erected a "gate" (fish weir?) across the stream, T'awał, that drains Aka and Rocky Lakes into the lagoon.

In 1948, on or near this stream, a Yakutat native, since dead, found a limestone rock, carved in typical Northwest Coast style to represent a bear (pl. 3, *b*). We were unable to discover just where it had been found, and although this is the only known petroglyph in the Yakutat area, the natives believed that it commemorated the defeat of the Russians by the Tłax̣ayik-Teqwedi. The rock was taken to Yakutat, where we saw it, but it later disappeared.

15. There was a former Kʷack̓qwan village, "On the Lake," at the middle of the ocean side of Aka Lake. The occupants died in the smallpox epidemic of 1836–39. The site was afterward used as a fish camp until fairly recently. It is now a clearing, but our brief exploration revealed nothing more than broken crockery and scraps of iron.

16. The stream connecting Aka and Summit Lakes was said to have been a canal, "dug by slaves," which probably means that they deepened or widened it at some point. Moser (1901, p. 383, map on pl. xlviii, Yakutat to Dry Bay) reports that: "The rocks and boulders have been removed from the bed,and piled along the side, forming a shallow channel up which canoes are tracked at low water, but may

be poled at high water." He locates this area on the lower stretch of the creek, just above the lagoon. A village at the junction of the stream and Aka Lake was occupied by Eyak-speaking Indians who were killed by the Tlingit Teqwedi. We were not able to visit this site.

17. Summit Lake drains both into the Ankau system and into Lost River. On the ocean side of the outlet toward Lost River there is said to have been a village, called in Tlingit, "Town on the Hill," because of its situation on a sandhill. It was occupied first by Eyak-speakers and later by the Kʷack̓qwan, who all died in the smallpox epidemic of 1836–39. We did not explore this locality.

SETTLEMENTS, LOST RIVER TO ITALIO RIVER

The stream which flows southeast from Summit Lake is erroneously designated as "Tawah Creek" (U.S.C. and G.S. chart No. 8402), or as "Ankau Creek" (U.S.G.S. topographic sheet, "Yakutat"). The natives call it "Lost River," and give the same name to the lower part of the stream which it joins, referring to the upper part of the same stream as "Little Lost River." We shall use the term "Lost River" to refer to the lower part of the stream; designate the stream from Summit Lake as its western branch; and retain the native name "Little Lost River" for the small northern branch.

18. Before the Russians came, there was a small settlement on the western branch, approximately opposite the "Number Two" runway of the Yakutat airfield. When the Russians were expelled, this became the principal village of the Kʷack̓qwan, with at least four large lineage houses and other smaller homes. The inhabitants were virtually wiped out by smallpox. Later the surviving Kʷack̓qwan moved to Khantaak Island, and the site was used as a fish camp (only?). It is called Ness̓udat. Moser in 1901 (p. 384) noted three houses and some fish racks at this locality.

The site occupies a fairly large clearing on the ocean side of the stream and is marked by at least three house pits and several cache pits, although none of the former could be identified as the ruins of any of the particular houses mentioned by our informants. We made test excavations along the cut bank of the stream, in the cultural deposit at the western end of the clearing, and in a house pit at the eastern end; but found only objects suggesting recent occupation. The house pit measured about 18 feet square, with postholes and remains of the corner posts some 5 inches beyond the end walls. The cultural deposits in the midden and in the house pit consisted of light-brown or gray sandy soil, containing ashes, flecks of charcoal, and occasional fire-cracked rocks. Maximum depths were about 24 inches in the midden, and 38 inches within the house pit, where cache (?)

pits were encountered below the floor level. The clearing extends about 300 feet along the stream and is about 160 feet wide. Unfortunately, it was only as we were leaving that we noticed what appeared to be a much older house pit in the dense wood west of the clearing.

Material from Nesśudat included: A cylindrical beach cobble used as a pestle (pl. 10, *k*), a hammerstone (N/10), a fragmentary siltstone whetstone (N/2), a small iron ball, 2.7 cm. in diameter (N/1), an iron spike and an iron nail (N/5), some small green, small white, and large white glass beads (N/6), and some fragments of English soft paste porcelain. These all came from the test hole in the house pit. From the midden on the riverbank were: a fragment of copper sheeting (N/14), a broad flat piece of iron, possibly from a can, folded and shaped into a knife or scraper (N/20), and an iron knife blade (pl. 4, *i*). Other items from the midden were: a clear glass liquor bottle, remains of a tin can, a large white bead (N/7), a blue glass bead (N/8), and an iron spike.

On the ocean beach near Nesśudat was found an iron spearhead which we were able to borrow from the finder for sketching (see fig. 13, *d*).

19. On the ocean side of the west branch, one-fourth of a mile above its confluence with Little Lost River, is the site of Diyaguna'ᴇt, an Eyak word meaning "Salt water comes in here" (pl. 1, *b*). It originally belonged to the Ł'ux̣̓edi or Muddy Water People, and after changing hands several times, was finally acquired by the Bear House lineage of the Tlingit Teqwedi. It became their principal village under X̣atgawet, although the latter is reported to have lived in his own house farther upstream at a place called "Strawberry Leaf" in Eyak. The village was visited by smallpox in 1836–39, but a number of inhabitants survived. During Teqwedi occupation, the village is supposed to have consisted of three or more houses, surrounded by a palisade. We were told the names of seven houses, but since one lineage house might have several names, we do not know how many actual buildings were implied. The village was inhabited up to about 100 years ago. One of the houses apparently had a carved bear figure above the door, or on a post that served as the doorway.

The site is on a sandbank about 100 yards long, 50 yards wide, and 20 feet high, which is now being undercut by the stream. The midden deposit of humus, charcoal, and fire-cracked rocks is from 4 to 18 inches deep in most places, but in one spot the bank has caved away to expose an old house pit containing a cultural deposit about 48 inches deep. In this fill were found a broken barbed slate blade (see fig. 14, *i*) and a fragment of a slate ulo or scraper (49–25–108), at depths of 24 and 30 inches.

On top of the bank were three house pits, measuring 32 by 32 feet and 5 feet deep, 30 by 20 feet and 4 feet deep, and 30 by 20 feet and 2 feet deep. Two other rectangular depressions and a circular depression, about 20 feet in diameter, may also be house pits. Two other circular pits, 12 and 8 feet in diameter and 5 and 3 feet in depth, respectively, were probably for caches.

None of these surface house remains appears to be very old. A rotted post was found in the corner of one of the smaller pits, and test excavations in the largest house pit uncovered one of the rotted roof beams and a piece of commercial copper sheeting with nail holes.

The slumped bank and the bed of the river are littered with fire-cracked rocks, pieces of commercial copper, iron nails, fragments of china, and scraps of burned bone. Some of the china (49–25–114) has been identified by Arnold R. Pilling, then a graduate student at the University of California, as probably of English manufacture between 1830 and 1875. Other pieces are of true Chinese porcelain, later than Canton ware, but similar to that introduced into California about 1850.

The following objects of native manufacture were found on the bank of the river: a planing adz blade (pl. 6, *d*), a sandstone slab possibly used as a saw to cut stone (49–25–109), a hammerstone (–110), a piece of worked greenstone (–111), and half of a round sandstone lamp like a complete specimen previously found here by one of the Yakutat natives (pl. 3, *a*). The same man also found two stone blades for splitting adzes. There was also a small whetstone (pl. 10, *d*) a scraper made of copper (see fig. 11, *f*), and an iron dagger (see fig. 13, *b*).

This material indicates habitation in both prehistoric and modern times.

20. A small site on the west side of Little Lost River, about one-half mile above its confluence with the western branch of Lost River, is called "Shallow Water Town" (in Tlingit?), and is supposed to have been the oldest village of the Ł'ux̣edi. It was acquired by the Tlingit Teqwedi, and finally given by a Teqwedi chief to his Kʷack̓-qwan brother-in-law, who planted native tobacco here. The site is a clearing about 200 feet long, about 75 feet wide, and some 20 feet above the streambed. There are no cultural deposits in the cut bank. An indefinite depression, about 20 by 20 feet, may be a house pit. Our two test holes indicated cultural deposits to depths of 10 and 20 inches, consisting of humus, ash, charcoal, and a few fire-cracked rocks. Three blue glass beads of the kind seen by Captain Cook in Prince William Sound in 1778 (S/2), an iron arrowhead (S/1), and a lump of red ocher were found. These may date from late protohistoric times, but fail to corroborate the native claim for great antiquity.

21. Several houses and tent frames mark the modern Indian fish camp on the west side of the mouth of Lost River. Two native houses on the east bank of the river, at the end of an abandoned railway spur from the cannery at Yakutat, opposite the mouth of the west branch, were built in 1919 but are no longer occupied. One house at the end of the railway was formerly ornamented by two carved wooden brown bear paws, from which it derived its name, but these were stolen in the summer of 1952.

22. Situk Village was on the east bank of Situk River, and extended between the railway trestle and the U.S. Fish and Wildlife Service station. It was founded by the Teqwedi about 1875–80, and was abandoned about 1916 (?). The site is marked by a few graves and the remains of collapsed framehouses. In the clearing opposite the Fish and Wildlife station there are some cache pits, about 3 feet in diameter and 8 inches deep. Those explored contained only ashes, rocks, and an iron bolt. In the river above the Government weir, men at the station found a grooved maul head, carved to represent an animal (see fig. 21, *d*). We were unable to discover any trace of an earlier site, although there may have been one.

23. "Eagle Fort," reported to consist of four houses connected by tunnels and surrounded by a palisade, was built by the Tłax̣ayik-Teqwedi shortly after 1805 because they feared Russian retaliation. Here they repulsed an attack by the Tł'ʊknax̣ᴀdi from Akwe River, but were defeated the next spring at Wuganiyᴇ (site 12) in Yakutat Bay. We were unable to visit the site of this fort. The name for the locality is known by both Eyak and Tlingit words.

24. A single Tł'ʊknax̣ᴀdi house was built about the middle of the last century on Johnstone Slough, about 1½ miles above the end of the railway from Yakutat. The fish camp at the mouth of Johnstone Slough and Situk River is modern.

25. The main village of the Drum House branch of the Tlingit Teqwedi was reported on the Ahrnklin River, about 2 miles above the mouth, apparently near the confluence of the two main branches. The village and also the river were named "Big Town of the Animals" (Tlingit), referring to the rich hunting in the area. There were said to have been four houses there, and the river, now undercutting the site, exposes charcoal to a depth of 4 feet. The village was abandoned when most of the inhabitants died, either in a feud or from smallpox. A Teqwedi settlement on the Ahrnklin, called "Wolf Cave," may be the same place, or possibly a lineage house at this town.

There are said to have been no villages on Dangerous River, but the Teqwedi are supposed to have lived on Italio River before they purchased the Ahrnklin area from the Stax̣ᴀdi. There were some fishing cabins on the Italio in 1909 (Robson, 1910, photograph on p. 171).

SETTLEMENTS IN THE DRY BAY AREA

Our information about former settlements in the Dry Bay area is unsatisfactory, owing in part to the shifting stream channels which render available maps inaccurate or confusing to our informants and in part to the great difficulties of travel encountered by Riddell and Lane in 1953.

Just west of Dry Bay, the Akwe and Ustay (Akse) Rivers have a common mouth. The Akwe or western stream drains the lake at the foot of Chamberlain Glacier and also ponds and swamps near the Italio River. The Ustay (Us-tay of Moser, and Akse of Tebenkov) is formed of two tributaries, the one draining the lake at the foot of Rodman Glacier to the west, and the Tanis, draining Tanis Lake to the east. Near the confluence of these two branches, the Ustay puts out distributaries draining eastward and southeastward into Dry Bay: Gines ("William") Creek to the north, and farther down the Ustay, the Kakanhini ("Muddy") Creek and the much smaller Stuhinuk ("Stickleback," or "Cannery Creek"), both of which enter Dry Bay near the mouth of the Alsek.

According to Tebenkov's map (1852, map vii; cf. also Davidson, 1904, map vi), there were villages on both the Akwe and "Akse" Rivers, designated, respectively as "Nearer" and "Farther Village to the Military Post" (at Yakutat). The Coast Pilot of 1869 (Davidson, 1869, p. 136), relying on Russian sources, reports in roughly this locality (59°14′ N., 138°45′ W.) the common mouth of two streams, each with a village on it, some 6 to 12 miles (by winding channel?) from their confluence.

26. The westernmost of these two villages was probably the principal town of the Tł'ᴜknax̣ᴀdi, called Guśex̣. This was reported to have been on the Akwe River, apparently at the confluence of the main or northern with the western branch. Tebenkov's "Nearer Village" is west of the river and north of a large slough. According to the Coast Pilot of 1883 (Dall and Baker, 1883, p. 206), about 1870 (or earlier?), one of the several villages between Yakutat and Dry Bay was visited by the captain of a whaler anchored at Yakutat. He reported this as "the largest, finest and most clean Indian village he had seen in all his experience on the coast. The population was large, the houses well built, solid, and adorned with paintings and carvings of wood, and expressly adapted for defense." It was permanently inhabited, parties leaving to trade or to hunt seals in Disenchantment Bay. The description would fit what was told of Guśex̣. Unfortunately, the chart (ibid., opp. p. 204) shows a village

at what would appear to be the confluence of the Ustay and a western tributary, but it is so inaccurate that no reliance can be placed upon it.

According to our informants, Guśex̣ had originally been an Athabaskan Tłukʷax̣ʌdi settlement before the Tlingit Tł'ʋknax̣ʌdi built houses here. The names of five houses were mentioned, and the posts of one were said to have been visible 40 or 50 years ago. It was from this town that the Tł'ʋknax̣ʌdi sent war parties against the Tłax̣ayik-Teqwedi on Situk River and Yakutat Bay, and to it they brought the Russian cannon and other treasures taken from their defeated enemies. The town was abandoned about the middle of the last century, after many of the men from it were drowned in Lituya Bay when going to make war on the Chilkat.

According to one native informant, this site was located about 4 miles (on a direct line) from the coast (see above); another placed it at the entrance to a former channel some distance down the Akwe and about 2 miles (on a direct line) from the shore. The latter described this place as having four or five house pits and one earth-covered house. The only site which it was possible for Riddell and Lane to reach was still farther downstream.

27. This was a site in a clearing on the west bank of the Akwe, opposite its (present) confluence with the Ustay River. There are several pits which may indicate former houses or caches, but digging failed to expose any cultural deposits.

Tebenkov's "Farther Village," is located farther upstream, on the west bank near the junction of the Tanis and Gines. Natives reported a site on Gines ("Williams") Creek.

28. A modern settlement was near the mouth of Stuhinuk Creek on the west side of Dry Bay. Here were native houses, some built as recently as 1909 or 1910, and the remains of a cannery, built and abandoned between 1901 and 1912. Moser's map (1901, pl. XLIII) indicates a village here in 1901.

About half a mile northeast of Kakanhini Creek and 2 miles northwest of Dry Bay, aerial photographs indicate an almost circular pattern in the heavy forest growth, according to Don J. Miller (letter, Oct. 30, 1957). "The photographs give the impression that trees were cut down around the circumference of a circle about 1,200 feet in diameter, but were left untouched or only partly thinned out within the circle." Miller did not visit this locality, nor did our party, so we do not know what this might be, although it is suggestive of a fortified town.

29. Other sites reported in the Dry Bay area are on the north shore of the bay on the west bank of the Alsek, and a town farther downstream called "It repeatedly shakes" (Tlingit). There were also settlements on Easting River, or possibly on Dohn River, streams

that cross the flats of Dry Bay east of the main, western, mouth of the Alsek. The first two settlements are said to have belonged to the Tłukʷax̣ᴀdi, but it was impossible to secure any clear information about their location or the period when they were inhabited.

OLD TOWN, KNIGHT ISLAND

By Francis A. Riddell and Frederica de Laguna

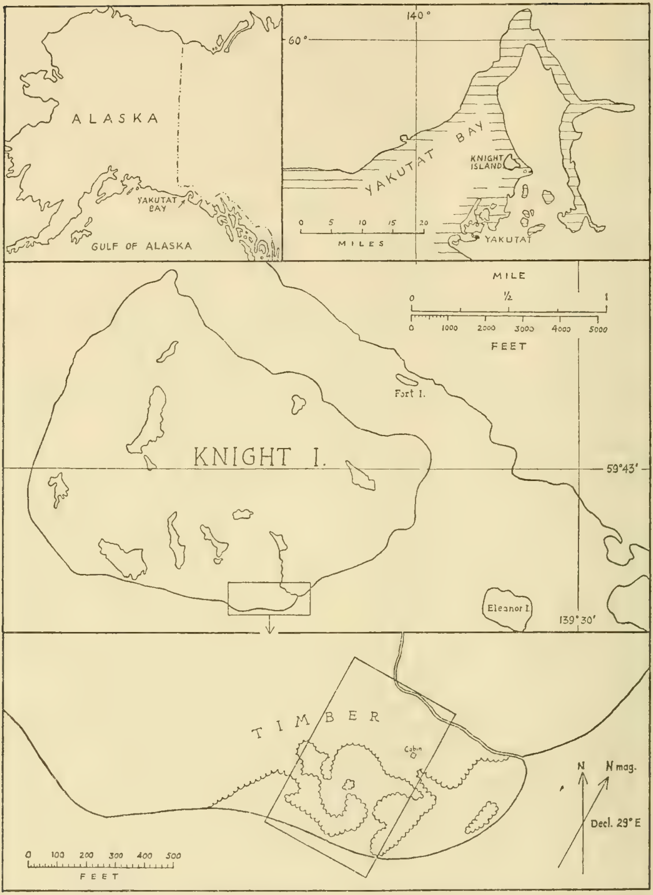
NATIVE TRADITIONS

Knight Island (map 5) is roughly 3 miles in diameter and lies close to the eastern side of Yakutat Bay, about 13 miles northeast of the town of Yakutat. The island is low lying, composed of sands, silts, and boulder clay. It is heavily timbered, and studded with small lakes, swamps, and creeks, none of which has salmon runs.

The native name for the island, G̣ᴀɴᴀᴡᴀs, is not Tlingit, and we suspect it to be an Eyak word, although some informants think it is Atna or even Chugach. The island was the first piece of territory acquired by the ancestors of the Kʷack̓qwan when they came to Yakutat Bay from Copper River. At that time there were no trees on the island, and it was covered with strawberries. The owners caught a Kʷack̓qwan girl picking berries here and cut the basket from her back. Her father, a G̣ałyɪx̣-Kagwantan chief, then bought the island for her and her people. Shortly afterward, a similar incident involving the fishing rights at the Humpback Salmon Stream, Kʷack̓ (see No. 6 on map 3), induced the Kʷack̓qwan chief to purchase territory on the mainland, thereby acquiring the present name for the sib and title to all the lands around Yakutat Bay.

Some informants say that the original owners of Yakutat Bay and Knight Island were Indians (Hɪnyedi, Yᴇnyedi, or Qusqedi); others call them "Aleuts" (Chugach Eskimo), but agree that they had no permanent settlement on the island. The site which we excavated is usually described as a Kʷack̓qwan town, founded and abandoned before the Russians came. Its correct name is said to be "Raven Falling Down" (yeł ada qutciyᴇ), because smoke from the many houses would asphyxiate any raven attempting to fly across. The same name has also been applied to the reported site (No. 7) on the cove about half a mile farther east. A few informants said that the village was founded by a Kʷack̓qwan chief who built the first lineage house here, "Fort House," and that his Tlingit brother-in-law, the famous X̣atgawet, built "Bear House" and named the village "Old Town" (Tł'ᴀkʷ-'an), after the famous town (Klukwan) on the Chilkat River, to suggest that this also was the home of high-class people.

While it is tempting to associate this tradition with the oldest house pit at the site, we must remember that our most reliable informant


ALASKA
YAKUTAT BAY
GULF OF ALASKA
140°
60°
YAKUTAT BAY
KNIGHT ISLAND
YAKUTAT
0 5 10 15 20
MILES
MILE
0 ½ 1
0 1000 2000 3000 4000 5000
FEET
Fort I.
KNIGHT I.
59°43'
Eleanor I.
139°30'
TIMBER
Cabin
N
N mag.
Decl. 29° E
0 100 200 300 400 500
FEET

Map 5.—Map of Knight Island, Yakutat Bay, with detail indicating the site of Old Town. Drawn by Donald F. McGeein.

insisted that X̣atgawet was a post-Russian chief associated with Lost River, and that the Knight Island site was pre-Russian. Furthermore, we found no clear evidence of post-contact occupation of the site.

Although no definite tradition explains the abandonment of the site, some informants suggest that it may have been due to smallpox. This is not unreasonable, since the epidemic of 1775 is reported by some informants to have spread to Yakutat from southeastern Alaska before the arrival of the first Europeans.

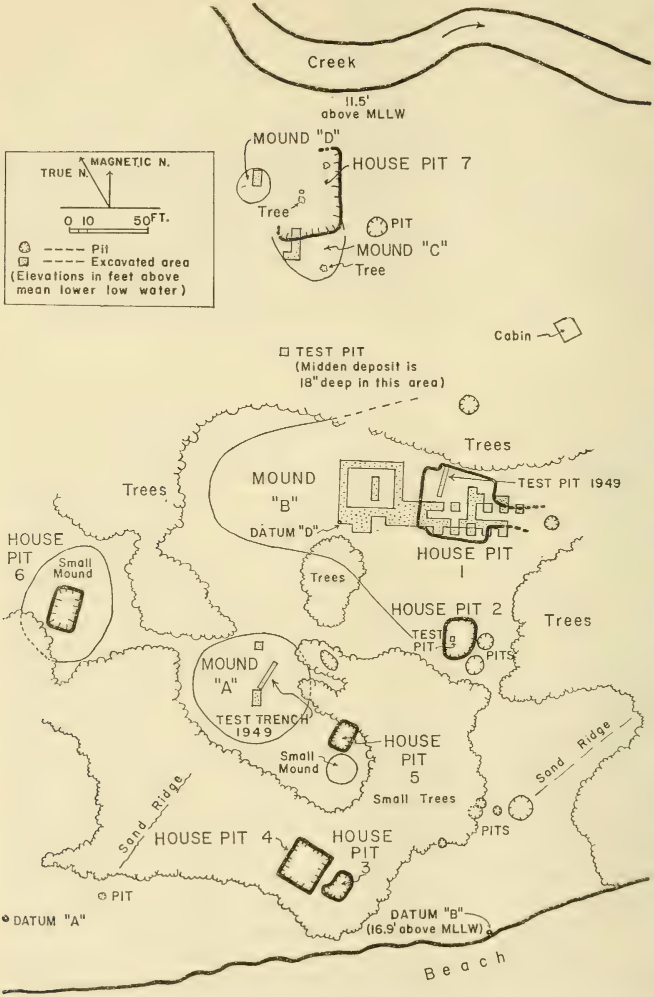
After Old Town was abandoned, the main Kʷack̓qwan village was at Ness̓udat on Lost River, and Knight Island was used only as a camping place for hunting parties.

There are also confused stories of raids on Knight Island by the Chugach and by the mixed Athabaskan-Tlingit Indians from Dry Bay. It was impossible to secure details, and while some raids were apparently prehistoric, others were later, but we do not know whether Old Town was involved in any of them. In these stories, Teqwedi are mentioned as living or camping on Knight Island, and as having fortified the rocky islet, "Little Fort," nearby, but it is not clear whether Tlingit Teqwedi or Eyak-speaking Tłax̣ayik-Teqwedi are meant.

THE SITE

The site of Old Town (map 6), on the southernmost point of Knight Island, consists of four trash mounds, seven house pits, and numerous smaller pits (for caches, bathhouses, etc.), scattered over an area of 3 or 4 acres. A small stream that presumably supplied drinking water to the inhabitants flows along the northeastern border of the site and enters a little cove 500 feet to the east. The major portion of the site is an open grassy flat, bordered by a spruce-hemlock forest. In the clearing, besides ryegrass, there is a luxuriant growth of sphagnum moss, wildcelery, salmonberry and elderberry bushes, short grass, and patches of nettles. In historic times the area is said to have been covered with wild strawberries, but the forest has encroached within the memory of the older natives and there are now many young trees in the clearing. Part of the site (Mounds C and D, and House Pit 7) lies within a mature forest growth apparently several hundred years old.

The underlying soil is composed of banded beach sands, evidently elevated above sea level within relatively recent geologic times. Several low sand ridges that traverse the site from southwest to northeast, or that lie southeast of it, seem to represent former beach lines. The most prominent of these, just southeast of the site, was probably the shoreline at the time of habitation, and seems to have been raised during the earthquake of 1899. The axis of tilting ran directly through the site, so that the shore to the east of datum B (map 6) was elevated, while the land immediately to the west was depressed. A maximum elevation of 7 feet was noted by Tarr and Martin (1914, p. 106) at the cove three-fourths of a mile east of the site, and there was a subsidence of 5 feet on the south shore about an equal distance to the west. Fortunately the quake and the waves that accompanied it did no serious damage to the archeological remains, except at the southwestern edge where an indistinct depression


Creek
11.5' above MLLW
MAGNETIC N.
TRUE N.
0 10 50 FT.
Pit
Excavated area
(Elevations in feet above mean lower low water)
MOUND "D"
HOUSE PIT 7
Tree
PIT
MOUND "C"
Tree
Cabin
TEST PIT (Midden deposit is 18" deep in this area)
Trees
MOUND "B"
TEST PIT 1949
DATUM "D"
Trees
HOUSE PIT 1
Trees
HOUSE PIT 6
Small Mound
HOUSE PIT 2
TEST PIT
PITS
Trees
MOUND "A"
TEST TRENCH 1949
HOUSE PIT 5
Small Mound
Small Trees
Sand Ridge
PITS
Sand Ridge
HOUSE PIT 4
HOUSE PIT 3
PIT
DATUM "A"
DATUM "B" (16.9' above MLLW)
Beach

MAP 6.—Map of Old Town, Knight Island, Yakutat Bay. Surveyed by Francis A. Riddell and Donald F. McGeein; redrawn by Irene Brion.

(House Pit 3) has been partly washed away and filled with beach gravel. Beyond this is a low, swampy area with a few dead trees, evidently killed by salt water after the subsidence (pl. 2, *b*). The earthquake may also have affected the course of the little stream, for just north of the site there is a depression that suggests a former channel.

In the woods northeast of the site is the cabin owned by a White resident of Yakutat, Gil Sensmeier.

SHAMAN'S GRAVE, KNIGHT ISLAND

On the north bank of the stream, about 400 yards above its mouth and a quarter of a mile north of the site, a grave under an overhanging boulder was found just prior to our first visit in 1949. The following description is based upon the account given by the discoverer and members of his family and upon our own observations in 1949 and 1952.

Although the skull had been removed by the finder, and a number of other bones were missing when we saw the grave, the vertebral column, the ribs, the bones of the legs and of the upper arms were still in position. The skeleton, that of an adult male, was lying on the back, head to the west. The body had evidently been placed in a coffin, but the latter was not interred. Although almost entirely disintegrated, fragments of wood indicated that the coffin had been originally 72 inches long and 30 to 32 inches wide, made of 1-inch planks put together with square-headed nails. With the skeleton were the remains of a blanket of mountain goat wool (pls. 18, *b*; 19; see pp.187–192), and also a number of little blue and white glass beads (49–25–59). The latter are similar to those found with early historic (late 18th century or early 19th century) burials on Glacier Island in Prince William Sound (de Laguna, 1956, p. 211). A tiny iron pot, a painted shell, and disk-shaped shell beads are also said to have been found in the grave.

Although one informant denied that the grave could have been that of a shaman because the beads were not the kind worn by shamans, it seems more probable that it was a medicine man who was buried here, for all ordinary persons were cremated at Yakutat until after the mission was founded in 1888. One informant believed that the grave was that of Dax̣odzu, sister of the principal Kʷack̓qwan chief, a female shaman who foretold the arrival of the Russians. Another said that it was the grave of a Tłax̣ayik-Teqwedi shaman, uncle of the man who led the successful attack on the Russian fort. One reason for this attack was because the Russians accused the natives of having stolen the nails used to make this coffin. It is perhaps significant that both of these traditions associate the burial with a shaman who died during the Russian occupation. There is, however, no reason to connect this late 18th- or early 19th-century burial with the occupation of Old Town, for shamans were often taken a long way from the nearest inhabited village for burial.

EXCAVATION AND MAPPING TECHNIQUES

In 1949 a rough sketch map was made of the site and some of the house pits were measured. Test excavations in Mounds A and B and in House Pit 1 indicated that the site would repay intensive investigation.

Before beginning excavation in 1952, the entire site was laid out in 5-foot grids or squares from an arbitrary point (datum A) beyond the southwest corner of the occupied area (map 6). All horizontal distances were measured north and east of datum A, additional datum points were established for convenience in mapping, and compass bearings on prominent landmarks were taken from datum B. Elevations were determined for the corners of the 5-foot squares, measuring from mean lower low water, and these were translated into a contour map of Mound B (map 7).

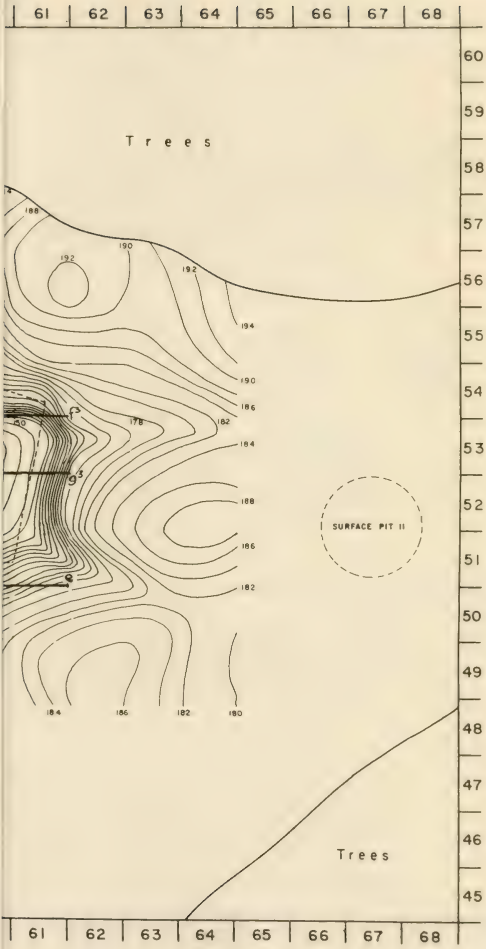
Most of the intensive excavations were concentrated in Mound B and the adjacent House Pit 1, because this mound appeared to be the largest and deepest midden deposit on the site, and because it was hoped that the house pit would yield information on house construction. In addition, tests were made in Mounds A, C, and D, with one end of a trench running into House Pit 7. Small test holes were made at various places in the site to determine the extent and composition of the deposits.

These excavations explored a number of pits, visible on the surface or buried beneath it, and also uncovered the remains of a storage house, and of two additional houses, 8 and 9, the existence of which had not previously been suspected. With few exceptions, profiles of the midden deposits were drawn for the walls of each square excavated (see figs. 5, 6, and 9).

Identifiable animal bones and samples of shell were kept for each 6-inch level of each square excavated. Most of the shells and unmodified bones were identified and recorded in the field, and then discarded. Those which could not readily be identified were retained for further study in the laboratory. A more careful analysis was made of faunal remains from certain test areas in each of the trash mounds (pp. 77–84).

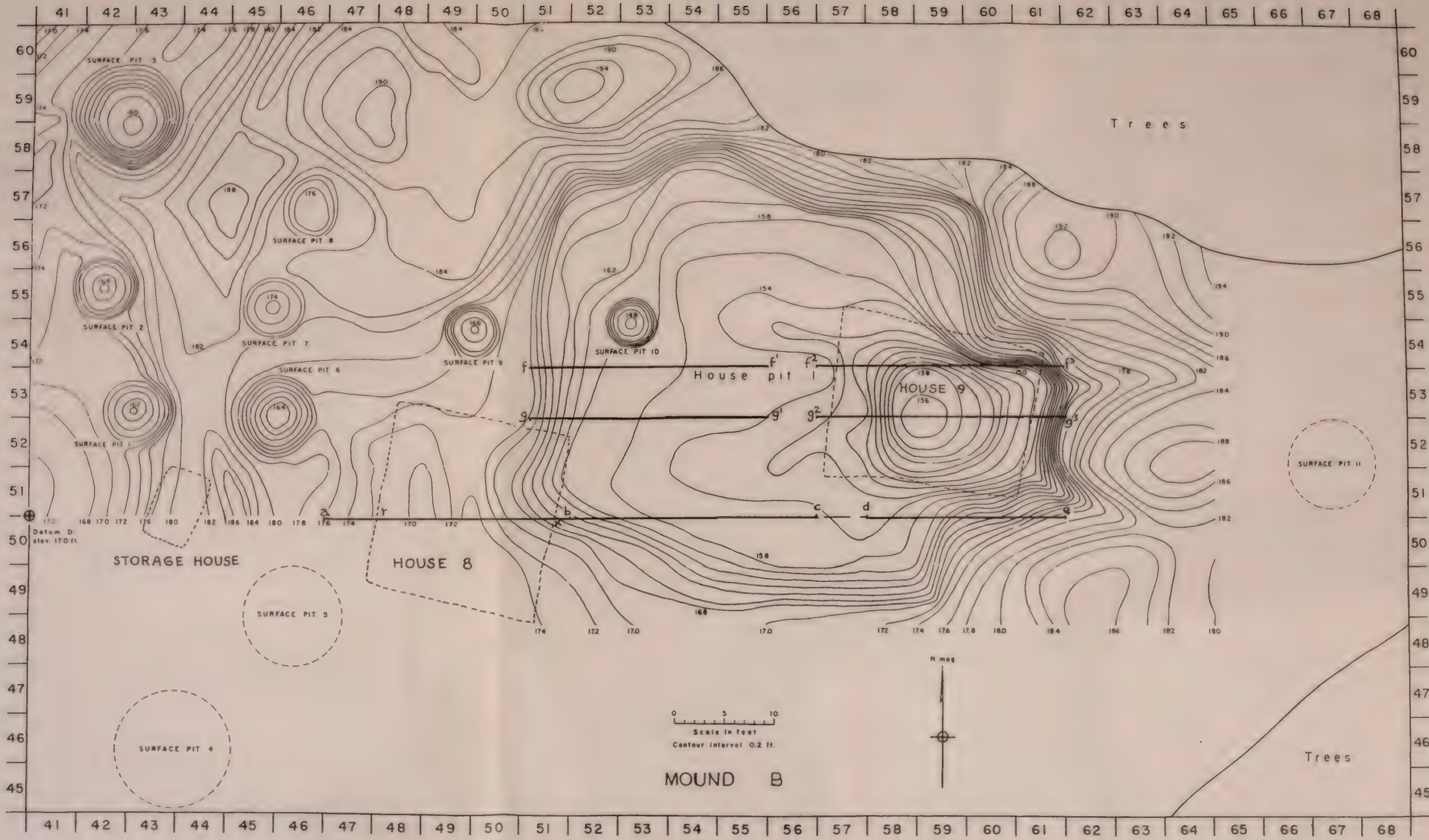
STRATIGRAPHY OF THE TRASH MOUNDS

Figure 1 is a schematic profile of a typical portion of Mound B, in which the following squares are shown from left to right: 48–57


61
62
63
64
65
66
67
68
60
59
58
57
56
55
54
53
52
51
50
49
48
47
46
45
Trees
188
190
192
192
194
190
186
182
184
178
150
f3
g3
e
188
186
182
SURFACE PIT II
184
186
182
180
Trees

'd F. McGeein.

693-818 O—64 (Face p. 36)


41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68
60 59 58 57 56 55 54 53 52 51 50 49 48 47 46 45
SURFACE PIT 3
SURFACE PIT 8
SURFACE PIT 2
SURFACE PIT 7
SURFACE PIT 9
SURFACE PIT 10
SURFACE PIT 6
SURFACE PIT 1
SURFACE PIT 11
SURFACE PIT 5
SURFACE PIT 4
Trees
House pit 1
HOUSE 9
STORAGE HOUSE
HOUSE 8
Datum D
elev. 170 ft.
a
b
c
d
e
f
f'
f²
f³
g
g'
g²
g³
N mag
0
5
10
Scale in feet
Contour interval 0.2 ft.
MOUND B
Trees

Map 7.—Map of Mound B, Old Town, Knight Island. Surveyed by Francis A. Riddell and Donald F. McGeein.

693-818 O-64 (Face p. 36)

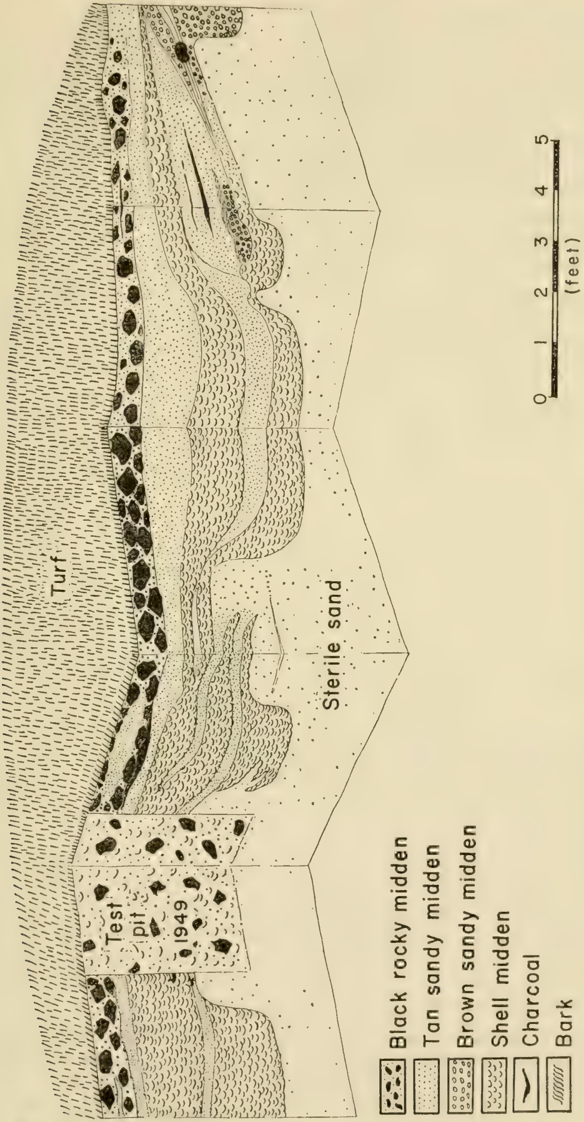

Turf
Sterile sand
Test pit 1949
Black rocky midden
Tan sandy midden
Brown sandy midden
Shell midden
Charcoal
Bark
0
1
2
3
4
5
(feet)

FIGURE 1.—Schematic profile of Mound B, Old Town. Drawn by Donald F. McGeein.

(south and west faces), 47–58 (south and west faces), and 46–58 (south face). Figure 5 is the actual profile along the south faces of Squares 61–51 to 47–51, as exposed in a trench which passed through the middle of House 8 and the southern edge of House Pit 1 (see map 7, *a–e*). Figure 6 shows both faces (f–f^3 and g–g^3) of Trench 53, which ran through House Pit 1 and House 9. Figure 9 gives profiles of Trench 33 through Mound C and into House Pit 7.

The maximum depth of Mound B was 90 inches. However, in areas where no pits had been dug into the underlying sterile sand, the deposits were between 24 and 36 inches thick. The entire trash mound was covered with a dense layer of moss, turf, and plants, about 2 inches thick, which has not been recorded on the profiles. The only stratum generally distributed over the mound is the black midden layer with fire-cracked rocks (see *Blk. RM* below), which occurs immediately under the turf. A similar black rocky layer was found in the upper part of Mounds A and D. In the deeper sections of Mound B, strata of shell midden are predominant. Most of the layers are of sandy midden, ranging in color from tan or light gray to brown and black, depending upon the amount of organic materials contained.

Because of the complex nature of the stratigraphy, owing in part to the aboriginal digging and subsequent filling of pits, and to variations in the thickness of the various layers, the depths below the surface at which artifacts were found do not necessarily indicate their relative ages. Although horizontal and vertical position within the square was recorded for each artifact found, a relative chronology for these specimens had to be based upon their association with upper (later) or with lower (earlier) strata of Mound B. In general, except when specimens were found at the bottom of deep pits, there was a tendency for artifacts to be concentrated in the upper layers.

The following types of deposit were distinguished in excavating Mound B, and similar materials were found in the other mounds.

Black rocky midden (*Blk. RM*) composed of many thermal-fractured rocks, charcoal fragments, and black stained sand. Larger rocks, 8 to 10 inches long, predominate. Mammal bone was scarce and so poorly preserved that it resembled wet, mushy cardboard.

Black sandy midden (*Blk. SM*) is medium-fine beach sand, stained by decomposed organic material and considerable quantities of charcoal. This usually contains some very fine fragments of shell, and some fire-cracked rock.

Gray sandy midden (*GSM*) is found in two distinct shades, light gray (*Lt. GSM*) and dark gray (*Dk. GSM*), but they are identical in composition. These consist almost exclusively of medium-fine beach sand, stained by organic material and charcoal, and often contain small flakes of mussel shell. Mammal bones and fire-cracked rocks are relatively scarce.

Brown sandy midden (*Brn. SM*) consists of beach sand, stained light brown. A darker phase of the same midden (*Dk.Brn. SM*) was also recognized. It contains occasional flecks of shell, small charcoal fragments, and a few fire-cracked rocks.

Tan sandy midden (*TSM*) is light tan in color, and contains only an occasional speck of charcoal or shell.

Shell midden (*SM*) of almost pure shell: mussel (*Mytilus*) by far the most common, with clam (*Saxidomus*), cockle (*Protothaca*), and sea urchin (*Strongylocentrotus purpuratus*) also common. These layers contain a high percentage of animal bones, mostly well preserved, and also a good deal of thermal-fractured rock and charcoal. Considerable amounts of rotted bark were also found, often at the bottom of the layer. The shell midden is distinctive in lacking sand.

Orange-brown midden (*OBM*) is almost exclusively associated with burned wooden structures such as houses and storehouses. It is made up of minute fragments of calcined shell, with occasional flecks of charcoal mixed with ash and sand.

Clean sand (*CS*) occurs in lenses or layers of unstained beach sand, ranging from light gray to light tan in color. It is similar to the *sterile sand* which underlies the midden deposits.

The maximum depth of Mound A is 40 inches. It is capped by the same type of black rocky midden that covers Mound B. No predominantly shelly strata were encountered, and the stratigraphy is not as complex as that of Mound B. While an upper and a lower layer could be distinguished, there was no evidence to suggest that this indicated different periods of cultural importance. All of Mound A would appear to be of the same age as the upper part of Mound B.

The maximum depth of Mound C is 32 inches. The deposit is not capped by black rocky midden, and there are no prominent shell layers, although occasional shell lenses occur. The second layer from the top is composed of black rocky midden, but this does not extend into the adjacent House Pit 7 (see fig. 9) except in one part of the fill. This layer contains a lower percentage of fire-cracked rocks than that overlying Mound B, and is much less extensive.

Mound D has a maximum depth of 30 inches. There is some black rocky midden in the top levels, and it also contains shell strata, so that in most respects it resembles Mound B, although it lacks the intrusive pits so characteristic of the latter.

Upper and lower levels could be distinguished in both Mounds C and D, but there appeared to be no cultural differences between them. Together with the fill in House Pit 7, they probably represent the oldest part of the site.

On the whole, the trash mounds at Old Town are not unlike the Tlingit middens of the Angoon area in southeastern Alaska (de Laguna, 1960), or the larger middens explored by Drucker (1943) in British Columbia. They differ, however, from middens in the Pacific Eskimo-Aleut area in containing far more earth or sand, and far less shell. The proportion of artifacts in all middens of the Northwest Coast is also much lower than in sites within Chugach, Koniag, and Aleut territory. This last may be due in part to the greater use of perishable wood for artifacts on the Northwest Coast and also to the fact that bone rots quickly in the more acid, less shelly deposits. Other differences may be due to cultural factors, such as greater reliance on fish and less on shellfish on the Northwest Coast, less carelessness in losing and discarding possessions (a trait for which the Eskimo are noted), or greater neatness in disposing of rubbish at village sites. Such care does not seem to have been taken at temporary camps or forts of the Tlingit (de Laguna, 1953, p. 55). Although our informants doubtless exaggerate the neatness of aboriginal housekeeping, the custom of frequently replacing the sand or gravel on the floor around the fireplace, which had to be done in any case before a shamanistic seance, might account for the high proportion of sand in the middens.

The concentration of fire-cracked rocks in the upper layers of the deposits, in contrast to their relative scarcity in the lower layers and in Mounds C and D, is paralleled at sites on Prince William Sound, Cook Inlet, and Kodiak Island. This has been interpreted (de Laguna, 1934, p. 162; Hrdlička, 1944, pp. 30, 133, 394; Heizer, 1956, pp. 23 f.; de Laguna, 1956, pp. 49, 266) as indicating the relatively late appearance among the Pacific Eskimo of the steam bath. This type of bath has a more limited distribution and so is presumably more recent than sweat bathing in heated air without steam. It also necessitates far greater use of hot rocks than does stone boiling of food. The steam bath seems to be older on Prince William Sound than on Cook Inlet and Kodiak Island, which suggests diffusion from the Chugach or the Northwest Coast Indians.

No clear proof of this hypothesis has yet been established. Thus Drucker (1943) noted no great concentration of fire-cracked rocks in the Tsimshian and Kwakiutl middens he explored, although such rocks were common and appear to have been fairly evenly distributed through the middens. We do not know, however, if there were so many as to suggest the steam bath. Ethnologically, sweat houses on the Northwest Coast are confined to the Tsimshian, Haida, and Tlingit, although the steam bath was also taken by the northern Kwakiutl (Drucker, 1950, Traits 375 and 667). Fire-cracked rocks are common in Tlingit sites in the Angoon area. Although Birket-

Smith (Birket-Smith and de Laguna, 1938, pp. 369 f.) has raised the question whether the steam bath may not have been introduced by the Russians, the evidence would indicate that it is prehistoric, although probably not very ancient.

The fire-cracked rocks in Mounds C and D would suggest that the sweat bath with steam was already known to the oldest inhabitants at Old Town, while House 8 in the lowest layers of Mound B appears to have been a bathhouse. However, the concentrations of fire-cracked rocks in the upper levels of Mounds A and B may indicate increased popularity of the steam bath in later times.

HOUSES AND CACHES

By Francis A. Riddell and Frederica de Laguna

HOUSE PITS

There were seven large rectangular depressions at Old Town that seem to have been the remains of houses. In addition, three more houses were found and excavated: House 8 and the Storage House, buried under the debris of Mound B, and House 9 which had been erected inside House Pit 1.

The houses seem to have been scattered over the site without reference to any regular plan or alinement, except that the ends, where presumably the doors were located, faced the beach. Except for the two largest pits, the dimensions of the others are similar to house pits at Nesśudat and Diyaguna'ᴇt on Lost River, although the latter are on the whole deeper.

House Pit 1 is one of the largest at the site (pl. 2, *a*), with maximum measurements of 50 feet by 50 feet, not including what appears to be the entranceway toward the southeast. It was dug when Mound B was about half its present height, and some of the excavated sand was thrown back onto the mound, covering the stratified deposits above House 8, a structure already abandoned and filled with midden when House Pit 1 was excavated. (See Tan Sandy Midden in the profile of Trench 51, fig. 5.)

After the abandonment of House Pit 1 and the structure which it presumably contained, a much smaller building, House 9, was erected in the southeastern (front?) end. Still later, after House 9 had been destroyed by fire, a third structure was built over the ruins. This last house evidently contained a place for sweat bathing. These three buildings in House Pit 1 (see figs. 6–8) may have been the last permanent houses to be erected at the site. What is known about them is described in later sections.

House Pit 2, about 50 feet southwest of House Pit 1, was about 30 feet long (northeast-southwest), 25 feet wide, and 2 feet deep. A small test excavation in the bottom revealed no trace of timbers or floor planks. These had probably rotted.

House Pits 3 and 4, lying close to the present beach and from 220 to 230 feet southwest of House Pit 1, are completely overgrown by a stand of small spruce trees (the grove in the center of pl. 2, *b*). House Pit 4 is about 30 feet long (northeast-southwest), 28 feet wide, and from 1 to 2 feet deep. House Pit 3, a rather irregular depression on the southeast side of House Pit 4, is about 18 feet long, 15 feet wide, and is somewhat deeper. It may have been a storehouse, smokehouse, or bathhouse associated with a dwelling in House Pit 4, but since no excavations were made in either pit, their functions are unknown.

House Pit 5 lies between House Pits 1 and 4. It is about 20 feet long (northeast-southwest), 10 feet wide, and 2 feet deep. The small mound southwest of the house may be sand removed in excavating the pit. Neither the house pit nor the mound was excavated.

House Pit 6 is an indistinct depression about 240 feet west of House Pit 1. It is roughly 30 feet long (northeast-southwest), 18 feet wide, and less than 1 foot deep. The slight elevation around the pit may be earth removed from it and refuse from the house built in it. A test hole in the mound revealed only very shallow midden.

House Pit 7 lies in the forest about 180 feet north of House Pit 1. It is a shallow, indistinct depression, about 50 feet square, bordered on the south and west by Mounds C and D. Test excavations made in Mound C and the house pit (fig. 9), indicate that the latter was dug through the lower levels of the mound. Mound D was abruptly cut off as if it had lain against the wall of the house, although no trace of timbers was found.

Mound A probably represents the debris from House Pits 3, 4, and 5. Mound B presumably contains the rubbish from Houses 1, 2, and 9, and from House 8 within it, and probably from other houses not yet discovered. Mound C antedates in part the digging of House Pit 7, although the fill of that pit also forms the upper levels of the mound. Mound D seems to represent the trash from House 7.

Although House Pits 1 and 7 are of approximately the same size, and are the largest at the site, the latter is probably the older. Thus, large trees are growing in it and on Mound C. The artifacts removed from this area, including Mound D, were not very different in type from those found in other parts of the site, except that no specimens of iron were present, although pieces of iron were recovered from Mounds A and B, and from the houses associated with the latter. It is reasonable to assume that the rubbish in Mounds C and D and House Pit 7 came from that house or from other dwellings in the vicinity, rather than from houses nearer the beach, and that this material is the oldest recovered at Old Town.

The Storage House and the sweat-bath house (House 8), described below, were probably later. They were contemporaneous and were the oldest buildings discovered in Mound B. Since both of these were excavated through the lowest layers of the mound, it is evident that these accumulations of rubbish must have been derived from some dwelling which we did not discover. Both the Storage House and House 8 were destroyed by fire, probably at the same time, and it is tempting to suppose that this may have been set by a raiding party. The fill in both belongs to the lower levels of Mound B.

At a considerably later period, when Mound B had accumulated over the ruins and was about half its present height, House Pit 1 was dug, presumably for a large house. Still later, after the destruction or abandonment of the latter, a small dwelling (House 9) was erected at one end of the large pit. Finally, after this in turn was burned, another more substantial structure, which seems to have included a room or place for sweat bathing, was built in House Pit 1, over the remains of House 9. The fill in House Pit 1 and House 9 (and over the third structure) is apparently contemporaneous with the upper levels of the midden in Mound B, and probably also with all of the deposits forming Mound A.

Unfortunately, the relative ages of the other structures at the site could not be determined, although there was nothing to suggest a long period of occupation of the site as a whole. House Pit 5 would indicate a structure about the size of House 9; House Pits 2, 4, and 6 were probably for larger buildings, but smaller than those for which House Pits 1 and 7 were presumably intended. House Pit 3 may have been a bathhouse like House 8. This evidence, as well as the house pits at Ness̓udat and Diyaguna’ᴇt, suggest that in the late prehistoric and early historic period most Yakutat houses were intended for occupancy by not more than four families, that some much larger multifamily dwellings were built, as well as small houses suitable for only one or two couples and their children.

SMALLER SURFACE AND SUBSURFACE PITS

In addition to the larger house pits, a number of depressions, about 5 to 12 feet in diameter and from 6 to 18 inches deep, were scattered over the site (see map 7). These were called "Surface Pits," only because they were visible before excavation, not because they had been originally dug from the present surface. Thus, Surface Pit 1 was excavated when the top of Mound B was about 2 feet below its present level; Surface Pit 6 when it was 1½ feet lower; and Surface Pit 7 when it was about 1 foot lower. Some of these surface pits had evidently been dug through earlier pits that were already filled with rubbish, perhaps because this facilitated digging. In turn, they became partially filled with midden material, generally the black rocky midden, and also with some gray sandy midden, together with scattered lenses of shell, charcoal, and rocks. Unbroken strata over the tops of most of these surface pits indicate that these were older than the last period of occupation of the site. Some pits contained materials belonging to both the lower and upper levels of Mound B.

About 40 completely buried pits were also discovered (see fig. 6). These had been dug into the sterile sand at the bottom of Mound B, when the top of the mound was much lower than it is at present. Subsequently they became filled with trash, mostly from the lower levels, so that no surface indications of their presence were visible. They were therefore called "Subsurface Pits," although they differ in no respects from the "Surface Pits."

Some pits were rectangular, ranging from boxlike holes, 3 by 1½ feet, to larger structures over 12 feet long and 6 feet wide. There must have been some kind of support for the walls, probably a lining of planks or bark, since there was usually no sign that the sand or midden had slumped in. In most pits no trace of such lining remained, but in several cases planks were preserved by carbonization. Probably there was also a wooden superstructure over the pit. These structures seem to have been underground or partially underground caches, like the Storage House described below.

Surface Pit 3 was marked by a depression 11 feet in diameter and 18 inches deep. When excavated, it proved to have been originally a rectangular pit, about 10 feet long and 8 feet wide. It contained some burned and unburned fragments of planking, probably the remains of the lining.

There were also bowl-shaped and basin-shaped pits, generally circular in plan, less often oval, and differing from each other chiefly in depth relative to the diameter. Both forms differed greatly in size, ranging from 16 inches to over 5 feet in diameter. A number of both kinds had bark linings. The fill ranged from relatively clean sand to layers of shell and rock with strata of pure shell and bone, apparently representing the refuse of individual meals. Some pits contained artifacts (see below); others did not. The functions of these pits are hard to determine. Those covered with bark or wood may have been caches, or pits where food was buried to become slightly rotten, as required for some native recipes; others may have served as bathhouses. Uncovered pits may have been ovens for roasting food or for heating rocks; some may have been dug simply to hold refuse.

Special mention should be made of Subsurface Pit 38 (see fig. 2), a bowl-shaped depression, 2 feet in diameter and 15 inches deep, under the south end of the Storage House. Since it may have been a cellar of the latter, it will be described with it (see pp. 48–51).

There were also depressions or pits in the floor of House Pit 1 and House 9, and a box in the floor of House 8. Such features, as well as fireplaces and pits with sweat-bath rocks, will be discussed in the detailed descriptions of the houses with which they were associated.

The articles recovered from the various surface and subsurface pits are listed below (field catalog Nos. are in parentheses). As may be gathered, most of these holes contained nothing other than midden fill. In each case, it is indicated whether the material belongs to the upper or lower levels of Mound B.

Surface Pit 1 (*upper levels*):
  Broken head for sea otter harpoon arrow, pl. 13, *f*
  Chipped green chert (29)
Surface Pit 3 (*upper levels*):
  Copper fragment (17)
Surface Pit 6:
  Upper levels:
    Small woodworking tool, pl. 8, *l*
    Schist drill (?) (14)
    Rubbing tool, pl. 10, *b*
    Copper ulo blade, fig. 10, *d*
    2 rectangular stone scrapers, fig. 11, *c* (and 83)
    Broken double-edged slate blade, fig. 11, *g*
    Green chert flake (92)
    Slate fragment (85)
    3 hammerstones (75, 76, 77)
  Lower levels:
    2 hammerstones (104, 122)
    2 hammerstone-abraders, one with red paint (36, 103)
    Beaver tooth chisel, pl. 16, *b*
    Bone gorge (51)
Surface Pit 8:
  Level unknown, probably lower:
    Bird bone awl, pl. 16, *m*
    Tooth pendant, pl. 17, *g*
  Lower levels:
    2 small woodworking tools (114, 121)
    Broken lamp (138)
    Broken harpoon head, pl. 13, *i*
    Sea otter harpoon arrowhead, pl. 13, *d*
    Barbed bird bone point, pl. 15, *k*
    Bone gorge, fig. 18, *b*
    Tooth pendant, pl. 17, *h*
    Cut bone (214)
    Cut wood (213)
Subsurface Pit 9 (*lower levels*):
  Whetstone (9)
Subsurface Pit 11:
  Upper levels:
    Small woodworking tool (15)
  Lower levels:
    Fragment of bone point (36)
Subsurface Pit 14, containing traces of fire (*lower levels*):
  Broken splitting adz (40)
  Small woodworking tool, pl. 7, *j*
  Broken barbed bone arrowhead, fig. 17, *e*
  Cut bone (48)

Subsurface Pit 15—see Storage House (below)
Subsurface Pit 23 (*lower levels*):
  Broken bird bone point (211)
Subsurface Pit 24—see House 8 (below)
Subsurface Pit 31 (*lower levels*):
  Tooth chisel, pl. 16, *c*
Subsurface Pit 32 (*lower levels*):
  Drift iron adz or scraper blade, pl. 4, *k*
Subsurface Pit 36 (*small cache house*) (*lower levels*):
  Small woodworking tool, pl. 7, *m*
  2 whetstones, pl. 10, *e* (and 377)
  Unbarbed bone arrowhead, pl. 15, *v*
  Bone shaft fragment (398)
  Cut wood (385)
Subsurface Pit 37 (*lower levels*):
  Hammerstone-abrader, pl. 10, *f*
  Toy lamp (394)
Subsurface Pit 39 (*lower levels*):
  Cut wood (692)

THE STORAGE HOUSE

One of the oldest plank-lined cache pits uncovered during the excavation of Mound B was a structure in the southwestern portion of the mound (see fig. 2). It was probably a storage house that had been burned down by a fire that started at its southern end and which consumed all but the floor planks and the lower ends of the wall planks.

The Storage House (originally designated as "Subsurface Pit 15") was 7 feet 9 inches long and 4 feet 6 inches wide. It had been built in a pit, sunk about 18 inches into the sterile sand below the midden. The floor level was between 3½ and 4½ feet below the present uneven surface of the mound. Above the remains of the house were about 2½ feet of undisturbed stratified deposit, consisting of black rocky midden, shell midden, and gray sandy midden belonging to the upper levels of Mound B. The fill inside the house, belonging to the lower levels, consisted of a fairly homogeneous deposit of stained sand, charcoal fragments including remains of the wall and roof, fire-cracked rocks, ash, and bits of charred bone. There were small lenses of clean sand in the fill, and about 3 inches above the floor planks was a thin layer of light-gray sand. Below the floor planks were 1 to 3 inches of midden that had probably sifted under and between the boards; at the south end this deposit deepened into the fill of Subsurface Pit 38. The latter contained brown midden, rotted bark, bits of charcoal, bone, shell, and fire-cracked rocks. This stratigraphy may suggest that the pit was older than the Storage House, but it may be simply a cellar.

The walls of the house were of roughly split planks, 4 to 22 inches wide and about 1 inch thick, which with two exceptions were set vertically in the sand at the bottom of the pit to an average depth of 10

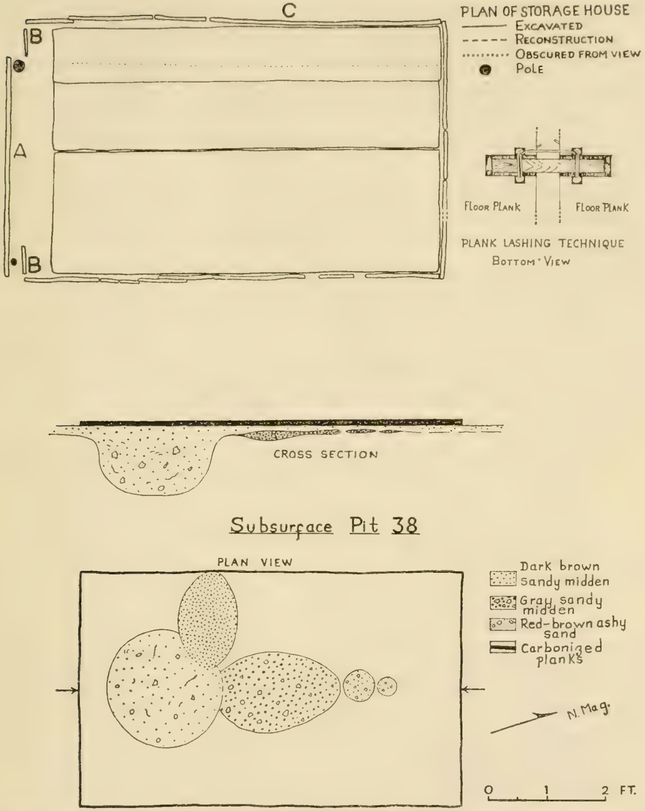

C
B
A
B
PLAN OF STORAGE HOUSE
Excavated
Reconstruction
Obscured from view
Pole
Floor Plank
Floor Plank
PLANK LASHING TECHNIQUE
Bottom View
CROSS SECTION
Subsurface Pit 38
PLAN VIEW
Dark brown sandy midden
Gray sandy midden
Red-brown ashy sand
Carbonized planks
N. Mag.
0
1
2 FT.

FIGURE 2.—Storage House and Subsurface Pit 38. Drawn by Donald F. McGeein.

inches. The entrance was at the south end where a horizontal plank (*A*), 40 inches long and 13 inches wide, formed a sill some 7 inches high. Two posts and the small vertical planks (*B,B*), 5½ inches wide, 20 inches long, and ½ inch thick, formed the sides of the doorway. One of the wall planks (*C*), 48 inches long and 15 inches wide, was set on edge.

The three floor planks, 81 inches long and 11 to 25 inches wide, rested directly on the sandy bottom of the pit. They had probably been inserted after the walls were erected, since the westernmost plank overlapped the central one and had not been trimmed to fit the floor space. The eastern and central planks were fastened together at the ends near the doorway. Here a rectangular area had been chiseled into their lower surfaces, into which was fitted a flat wooden crossbar. The latter was secured by a lashing of split spruce root that passed between a pair of holes in each plank. This arrangement may have been intended to facilitate lifting the floor planks in order to reach the pit below.

The structure was probably roofed, but of this we have no direct evidence because fire had destroyed all of the upper part of the house. The quantities of carbonized moss and grass, found between the floor planks, between these and the walls, and under fragments of charred wood fallen on the floor, suggest that the Storage House had been chinked at floor, walls, and roof (?), presumably to prevent the contents from freezing.

Identification of this structure as a cache was based partly on the following artifacts found in it and in the pit below.

In Subsurface Pit 38:
- Point of a large double-edged slate blade, another fragment of which was found in the lower levels of Mound B above the Storage House, fig. 14, *b*
- 2 barbed bone points for arrows (or leisters), fig. 17, *b*, *l*
- Bone barb for gaff or fish spear, fig. 18, *g*

Below floor of Storage House:
- Bird bone tube (422)
- Bone shaft fragment (420)
- Wooden spatula, fig. 24, *c*
- Wooden blade, fig. 24, *b*

On floor of Storage House:
- Ulo with wooden handle and copper blade, fig. 10, *a*
- Whetstone, pl. 10, *c*
- Bear canine, pl. 16, *i*
- Wooden comb, fig. 20, *c*
- Wooden figurine, fig. 22
- Fragments of 2 wooden boxes or dishes, fig. 23, *a*, *b*, *b′*
- Wooden rod scarfed at both ends, fig. 16, *d*
- 2 spatulate wooden objects, fig. 24, *a* (and 416)
- Fragment of bidarka rib (?), fig. 24, *e*
- Fragments of twined grass or bark matting (418)
- Fragments of carbonized two-ply cord (195, 196, 254, 365)
- Band of strung ryegrass stems, fig. 23, *d*, *d′*
- Calcined bone fragments (428)
- 2 fragments of cut wood (199, 284)

Just above floor of Storage House:
- Stone ax, pl. 5, *i*
- Cobblestone anvil (392)
- Small stone lamp (412)
- Slate blade for arrow or knife, fig. 14, *a* (associated with basketry fragments, pl. 18, *a*)
- Broken barbed point for arrow (?) (288)

- Bone shaft fragment (205)
- Fused bone (411)
- Slag (200)
- Copper fragment (287)
- 2 drift iron blade fragments, pl. 4, *e* (and 201)
- 5 scraps of drift iron (258)
- Barbed wooden spear point, fig. 16, *a*
- Wooden box fragment (413)
- Wooden pin, fig. 24, *d*
- 12 fragments of worked wood (181, 182, 224, 257, 285, 286, 364, 366, 378, 386, 415, 425)
- Fragment of two-ply cord (208)
- Knotted spruce root (?) (226)
- Fragments of twined basketry: some with false embroidery, pl. 18, *a* (and 232/233); some plain, pl. 18, *a* (and associated with slate blade, fig. 14, *a*, and with salmonberry seeds)

Fill of Storage House (*i.e., lower levels of Mound B*)

- 2 sea otter harpoon arrowheads, pl. 13, *c*, *e*
- Broken barbed bone arrowhead, fig. 17, *k*
- 2 beaver tooth chisels (381, 409)
- Broken bone knife or scraper (302)
- Bone awl (?) (406)
- Fragment of bone shaft (407)
- Notched cobblestone (295)
- Cut bone (197)
- Bone figurine worn as pendant, fig. 20, *a*
- 11 pieces of worked wood (87, 120, 171, 173, 175, 176, 178, 180, 183, 186, 187)
- Fragment of two-ply cord (431)
- 2 teeth of wooden comb (?) (179, 184)

The perishable materials—wood, cordage, and basketry—were preserved because they were charred, probably in the fire that destroyed the Storage House. The baskets may have been used to store food and other objects, or to gather berries, as is suggested by the association of salmonberry seeds with one group of undecorated basketry fragments.

HOUSE 8

The burned remains of a small house (figs. 3 and 4) were discovered at the bottom of the midden near the southern edge of Mound B (see map 7 and fig. 5). The house (first called "Subsurface Pit 24") was almost 18 feet square, and had been built inside a pit about 20 feet square, dug into the sterile sand for a depth of 30 inches. The floor of this pit was level. Vertical wall planks were driven into the sand to a depth of 1 foot, leaving a space about 1 foot wide between the walls and the edges of the pit. Later this space was filled with sandy midden to brace the walls, and the floor planks were laid. Eventually the house was destroyed by a fire that evidently started inside it and consumed all but the floor and the walls to about 15

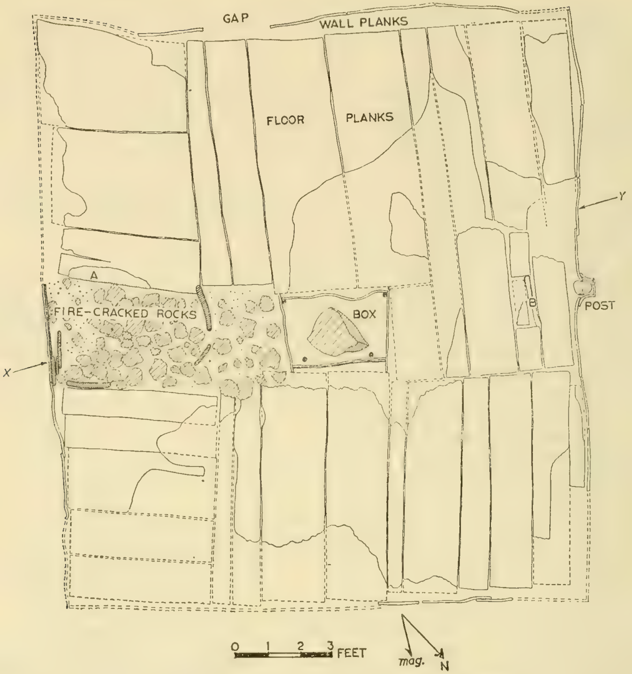


FIGURE 3.—Plan of House 8. Drawn by Donald F. McGeein.

inches above the floor. These charred remains were eventually buried under midden deposits 2 to 4 feet deep. The stratigraphy of the mound (see *X–Y* on the profile of the south face of Trench 51, fig. 5) shows that the house had been built during the early history of this part of the site; the unbroken layers above the fill attest its relatively great age.

WALLS

The walls of House 8 were of planks split from straight-grained wood that was free of knots, probably spruce. They were not smoothed on the surfaces. They varied in width from 1 to 2½ feet and in thickness from about ¼ to over 1½ inches. When the house was burned, the upper parts of the walls fell into the house; no wall fragments were found outside.

The plan (fig. 3) shows that a number of wall planks were missing. Possibly these had been salvaged after the fire. The gap in the

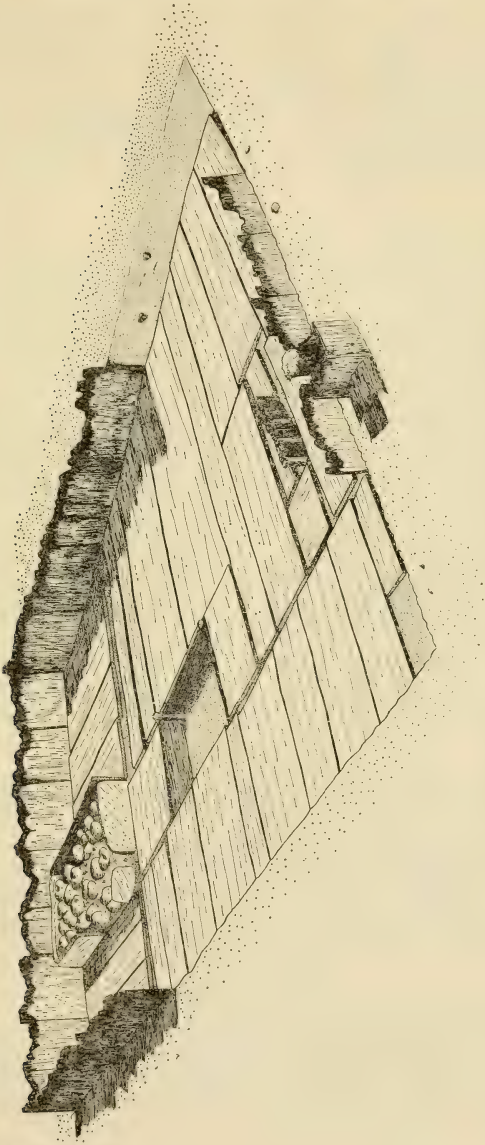


Figure 4.—Reconstruction of House 8. Drawn by Donald F. McGeein.

otherwise complete line of planks along the southwest wall suggests an entrance, although a very narrow one. However, since the floor was 2 to 2½ feet below the surface, this gap would have allowed sand to spill into the house in the absence of some kind of sill or ramp, no evidence of which was found. Probably the wall planks in this area had simply been removed, and the doorway was a hole cut through the wall at or above ground level, with a step inside the entrance.

ROOF

In the center of the northwest wall was a post that had been burned down to about 19 inches above the floor. The bottom was 40 inches below floor level. The post was originally 10 inches in diameter, and had been placed in an oval hole, 20 by 16 inches and 42 inches deep, partly filled with rocks to anchor the post. Three split planks were set around it, making a small alcovelike bulge in the wall. About 5 inches of the post below floor level showed charring, indicating that it had been exposed to this depth. The side of the post facing outside the house was relatively unburned as compared to that on the inside. When found, the post leaned several degrees toward the center of the house, its lower end well outside the floor area.

Although no other posts of the same type or size were found, this post probably supported one end of a ridgepole, the other end of which presumably rested on top of the large plank in the opposite wall (beyond the container of fire-cracked rocks). The roof was partly or completely covered with sheets of bark, carbonized remains of which were found on the floor. It is reasonable to assume that the roof was gabled. If the eaves were too low at the sides to permit entry, the doorway would have been at one of the gabled ends.

FLOOR

The floor of the house was entirely covered with planks except at the sunken box in the center and the portions filled with fire-cracked rocks, as indicated on the plan (fig. 3). There were from 29 to 33 such planks, ranging in thickness from ½ to slightly over 1 inch. Their sizes varied, the maximum lengths being 8 feet and the maximum widths 3 feet. Their upper surfaces and edges had all been smoothed. All were charred in the fire.

SWEAT-BATH ROCKS

A container of fire-cracked rocks in the middle of the southeast wall was not a hearth for cooking but seems to have been a receptacle for sweat-bath rocks. It was 5 feet long and 3 feet wide, made of several large stone slabs, about 2 inches thick and set on edge

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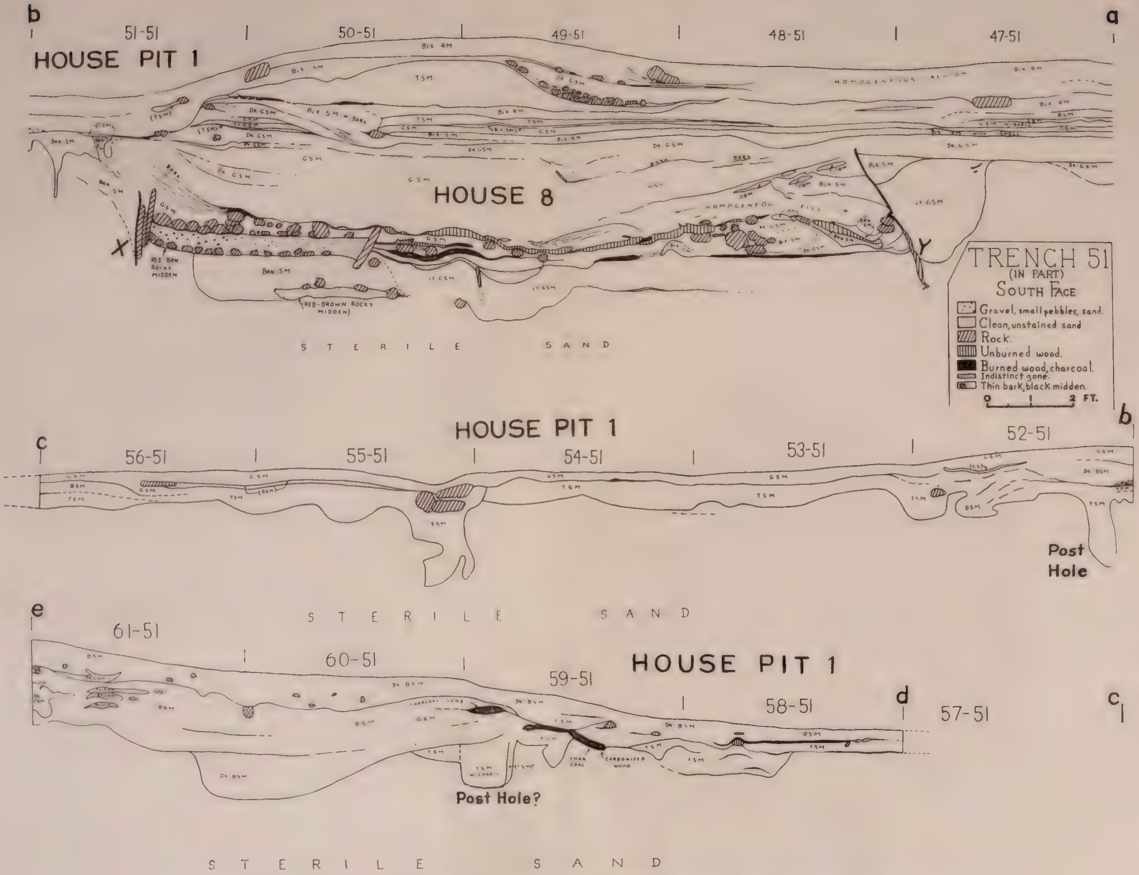

b
51-51
50-51
49-51
48-51
47-51
a
HOUSE PIT 1
HOUSE 8
HOMOGENEOUS FILL
X
Y
RED BRN ROCKY MIDDEN
RED-BROWN ROCKY MIDDEN
STERILE SAND
TRENCH 51
(IN PART)
SOUTH FACE
Gravel, small pebbles, sand.
Clean, unstained sand
Rock.
Unburned wood.
Burned wood, charcoal.
Indistinct zone.
Thin bark, black midden.
0
1
2 FT.
HOUSE PIT 1
c
56-51
55-51
54-51
53-51
52-51
b
Post Hole
STERILE SAND
e
61-51
60-51
59-51
HOUSE PIT 1
58-51
d
57-51
c
CHARCOAL
CARBONIZED WOOD
Post Hole?
STERILE SAND

FIGURE 5.—Cross section of Trench 51, through House 8 and House Pit 1. Drawn by Donald F. McGeein.

(indicated on the plan by dark shading). The southwest side of this bin was formed by a plank (*A*) that had fallen out.

The rock deposit inside this container was about 10 inches thick, the lowest part consisting of small rocks, above which was a gravel-like layer of fine rock fragments, sand, and occasional bits of charcoal and ash; on top were larger rocks, averaging 6 inches in diameter. These were mostly rounded sandstone cobbles, burned a dull red brown. The reddish gravel below had probably resulted from fracturing the heated stones when water was poured on them to produce steam.

At a depth of 9 inches below the bottom of the rocks in the container was another layer, about 2 feet long and 3 feet wide and 4 inches thick, made up of the same kind of fire-cracked sandstones. This layer was at the bottom of a pit almost 2 feet below the floor of the house, which apparently represents a period when the house was first occupied. Later, it was evidently decided that the pit was too deep, so it was filled with a homogeneous layer of brown sandy midden, on top of which the rock container was built (see the cross section in fig. 5).

Fire-cracked rocks were found scattered over the floor of the house outside the bin. The latter had been built up some 8 to 10 inches above the floor level, but when the house burned, the slabs and boards forming the sides were displaced, allowing the rocks to spill out. Except for the unplanked area between the container and the box in the center of the floor, this spillover is not indicated on the plan.

BOX

A small plank-lined pit, below the level of the floor, is in the center of the house. The upper edges of the plank lining were either flush with the floor planks or projected only an inch above them. The sides of the box were of small planks, set on edge with the grain running horizontally. These enclosed a space 3 feet long, 2 feet wide, and about 8 inches deep. The planks themselves were about 3 feet long, from 12 to 18 inches wide, and ¼ to ¾ of an inch thick. They were not fastened together at the corners, but were simply held in place by four stakes, 1¼ inch in diameter and 40 inches long, set inside the box. These projected 2 inches above the sides, but may originally have been longer.

The box was covered with short boards, not part of the regular flooring, and the bottom was lined, at least in part, with pieces of bark. Quantities of carbonized moss were found on or just below the bark. Above this was a layer of burned sand, ash, and minute shell fragments, all of a very uniform texture, and a number of fire-cracked rocks. On top of the sandy fill was a large angular boulder which, surprisingly enough, showed no evidence of having been subjected to fire. While such stones are said to have been put on roofs to hold down planks or sheets of bark, this stone does not seem to have fallen through the roof or the cover of the box. Its significance is unknown. The upper 6 or so inches of fill in the box consisted of a mass of carbonized wood fragments, burned sand, bark, and some pieces of shell.

Near the center of the southwest wall, in front of the post, was set a vertical board (*B*). It was 20 inches long, 20 inches wide, and 3 inches thick, and extended 18 inches below the floor. The 2 inches that projected above the floor was battered as if the plank had served as an anvil; the wood fibers were considerably "broomed." The lower end was not sharpened, so it must have been inserted into a small pit, not driven into the ground. Although this plank evidently provided a working surface for some task involving pounding, the nature of this cannot be determined.

House 8 would appear to have served primarily as a sweat-bath house, and this function was also suggested by the natives with whom the field data were discussed. Such bathhouses were sometimes used also as sleeping places. One might assume from the battered board (*B*) and from the artifacts found on and below the floor planks that the building had been used as a workshop. These objects include the hammerstones, whetstone, grinding slab, paint, lamps, scraps of iron, small woodworking tools, adzes, and fragments of worked wood and bone. The broken war club head and splitting adz, and to a lesser degree the harpoon head and barbed arrowheads, suggest that the workers were men, not women. However, the box in the center of the floor which contained so much moss resembles very closely that described by our informants as made in the women's birth house. This birth house was a permanent structure, used by all the women of a large lineage house at childbirth and during menstruation. It was described as containing facilities for sweat bathing. The birth pit was said to have been as deep as the distance from the fingertips to the elbow, and was filled with soft moss almost to the top to receive the baby. The woman in labor squatted over the pit, grasping a vertical pole in front of her. No remains of such a pole, it should be noted, could be identified in House 8. Furthermore, this house is considerably larger than the birth hut, which was supposed to be just big enough to accommodate the parturient, the midwife, and two assistants.

It is possible that House 8 was originally a bathhouse and workshop, later converted by the women into a birth house. It could hardly have been entered by men after contamination by women in childbed. Why the box should have contained the boulder we cannot explain.

In any case, after the house was burned, the pit was used as a trash dump. The stratigraphy indicates that House 8 was contemporary with the Storage House. Both belong to the early part of Mound B, and the fill in both consists of its lower levels.

The following objects were found in House 8:

Below the floor:
- 2 hammerstones, one with red paint (1005, 1009)
- Whetstone (665)
- Drift iron blade fragment, pl. 4, *j*
- Drift iron nail, found in a small bark-lined pit (651)
- Broken harpoon head, pl. 13, *l*
- Bird bone point (687)
- Wooden stake (680)
- Piece of skin (646)

In container of bath rocks:
- Hammerstone (1008)

In central box:
- 2 broken barbed bone arrowheads (?), fig. 17, *c*, *d*

On the floor:
- Splitting adz, pl. 5, *a*
- Broken planing adz, pl. 6, *a*
- 2 small woodworking tools (982, 994)
- Hammerstone (989)
- Whetstone (1003)
- Grinding slab (628)
- Rock with red paint (619)
- Broken head for war club, pl. 5, *c*
- Wooden plank (744)

Just above the floor:
- Small woodworking tool (995)
- 2 hammerstones (983, 991)
- Piece of red ocher (903)
- Stone lamp, pl. 11, *a*, and fig. 12, *a*
- Broken lamp (1007)
- Curiously shaped limestone pebble (amulet?) (547)
- Section of cut whale rib (1014)
- Fragment of cut wood (1000)

Fill of House 8 (i.e., lower levels of Mound B):
- 2 small woodworking tools (598, 694)
- Hammerstone (981)
- 2 abrading stones or whetstones (985, 986)
- Rubbed stone (956)
- Lump of red ocher (571)
- Cobblestone with red paint (952)
- Chipped slate knife(?) (666)
- Sea otter harpoon arrowhead, fig. 15, *b*
- Bird bone awl, pl. 16, *o*
- Bone peg (621)
- Large quartz crystal (146)
- Mica scrap (907)
- Copper pin, fig. 18, *d*

Copper dangler, fig. 19, *i*
Lump of coal (637)
2 fragments of worked wood (177, 597)
Carbonized cordage (629)
2 pieces of bark (614, 615)

HOUSE PIT 1

House Pit 1 in Mound B is roughly rectangular, measuring 50 feet in length. The width is about 45 feet at the front(?) end toward the southeast, but widens to about 50 feet near the rear, and then abruptly narrows to form an alcove 40 feet wide and 7 feet long. The pit is surrounded by a low pile of earth that is broken only at the southeastern end, where it is thrown up on each side to leave a sunken approach about 20 to 30 feet long. The maximum depth of the pit before excavation was about 3½ feet below the top of these earthen walls, the deepest part being just inside the sunken entranceway, where the later pit for House 9 was dug (fig. 6).

As already mentioned, House Pit 1 was excavated through the lower layers of Mound B, and some of the tan sandy midden which was dug out was thrown on top of the fill overlying House 8 (fig. 5). House Pit 1 and all its contents belong, therefore, to the later levels of Mound B.

In 1949 a narrow test trench was made in the northern quarter of the house pit, from the side wall just forward of the rear alcove to the center (i.e., to Surface Pit 10 on map 7). Charred timbers revealed by this trench suggested that there had been a bench about 6 or 7 feet wide along the northeast sidewall, and that a pair of central beams supported a gable roof, as on the large Tlingit houses of historic times. The floor was about 14 inches below the present surface of the pit. It was assumed that the alcove represented a line of sleeping cubicles across the back of the house, although this was never excavated. A test hole near the front of the house pit (see *Q* on the plan of House 9, fig. 7) uncovered a sloping layer of charcoal-stained sand, but no clearly defined hearth as had been expected.

Unfortunately, it was impossible to excavate this house pit completely, but two trenches (figs. 5, 6), as well as other areas near and in House 9, were dug. These later excavations showed additional traces of beams and timbers. Thus, there were layers of carbonized wood, possibly part of a bench, and a large posthole near the south corner of the house (see fig. 5, *d-e*). There is a similar posthole in the west corner (fig. 5, *b-c*). A beam running across the back of the house in Square 52–53 is shown in the cross section *f-f′* and *g-g′* (fig. 6), and nearby is a large posthole which may have contained one of the pair of central rear posts for the twin ridgepoles. Another posthole, 15 to 18 inches in diameter, and also sunk into the sterile

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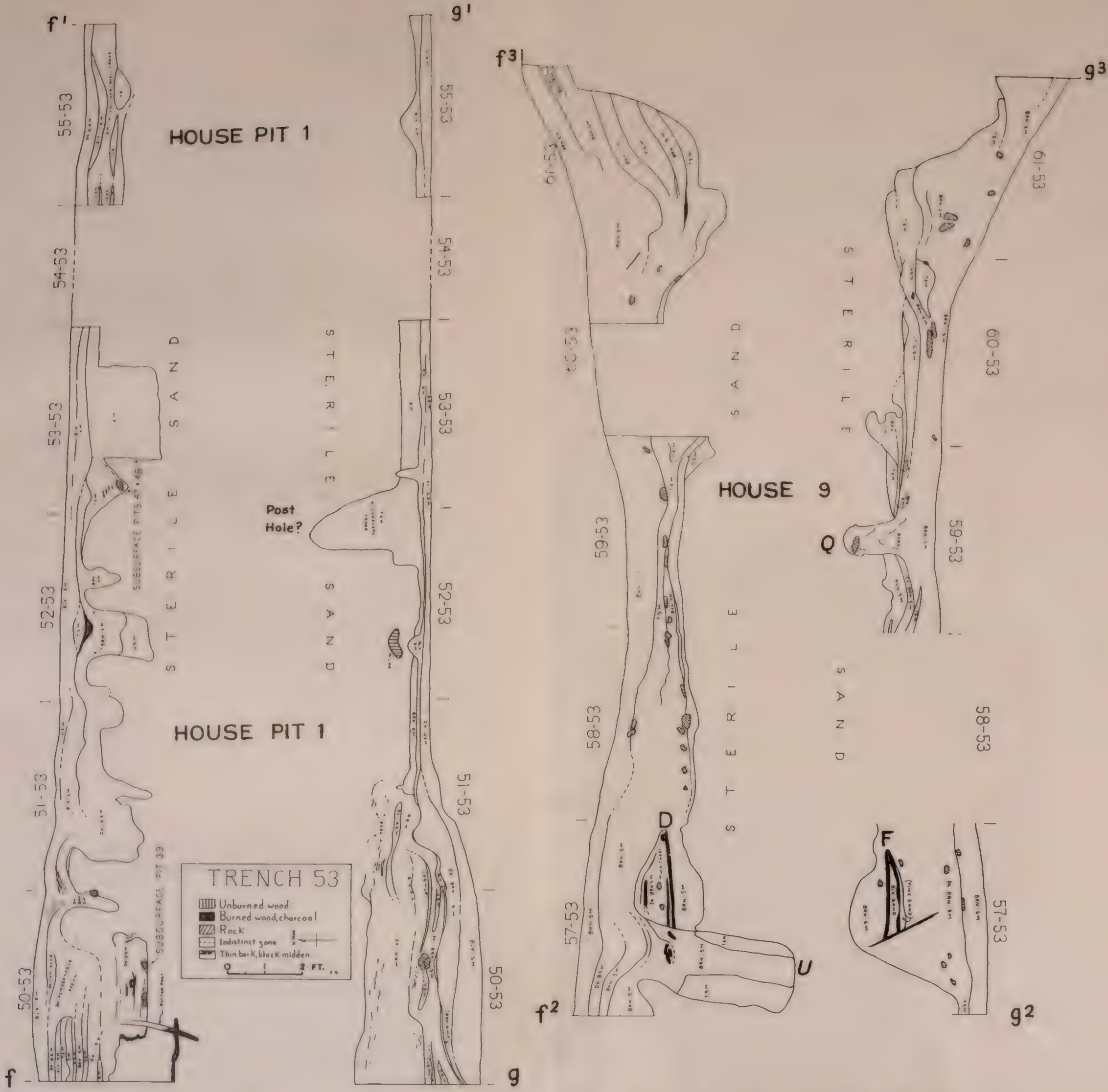
f'
g'
f3
g3
55-53
54-53
53-53
52-53
51-53
50-53
61-53
60-53
59-53
58-53
57-53
HOUSE PIT 1
HOUSE PIT 1
HOUSE 9
STERILE SAND
STERILE SAND
STERILE SAND
STERILE SAND
SUBSURFACE PITS 47+48
SUBSURFACE PIT 39
Post Hole?
Q
D
F
U
f2
g2
f
g
TRENCH 53
Unburned wood
Burned wood, charcoal
Rock
Indistinct zone
Thin bark, black midden
0 1 2 FT.

Figure 6.—Cross section of Trench 53, through House Pit 1 and House 9. Drawn by Donald F. McGeein.

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soil to a total depth of 63 inches below the present surface, was 33 inches below the northern end of the floor plank marked *F* on the plan of House 9 (fig. 7). A post in this hole may have supported the other end of the same ridge beam.

A surprising feature was that no rubbish, animal bones, or artifacts, were found on the floor of House Pit 1, although there were many such finds in the fill. Other than the postholes and the scanty traces of charred beams or planks already mentioned, there is no clear evidence that a house was actually erected in the pit. Perhaps the structure was burned before it was completed and the undamaged timbers were salvaged. Or, the house may have been abandoned and dismantled, so that few traces were left. The timbers may have, of course, simply rotted. Below the floor level were a few pits or depressions in which some artifacts were found.

It is difficult to separate the material found in the fill of House Pit 1 with that associated with House 9, especially as the former may actually have been derived from House 9. Conversely, some of the material found below the floor of House 9 or in the fill of that building may have come from buildings erected before it (House 1) or after it. All of this material is approximately contemporaneous in age. If there was actually a large multifamily dwelling in House Pit 1, that building must have been kept clean and have been voluntarily abandoned; not destroyed with most of its contents, as was the fate of the Storage House and Houses 8 and 9.

In pits below the floor level of House Pit 1:
  Hammerstone (673)
  4 hammerstone-abraders (667, 668, 987, 988)
  Grinding stone with red paint (743)
  2 stones with red paint (706, 992)
  2 stone lamps, pl. 12, *e* (and 738)
  Coal bead, pl. 17, *x*
  Lump of coal (623)
  Copper bracelet, fig. 19, *d*
  Coil of copper wire (701)
  Scrap of copper (996)
Fill of House Pit 1, including shallow fill above House 9:
  2 splitting adzes, pl. 5, *b*, *d*, found under a grinding slab (741)
  Planing adz or ax, pl. 6, *i*
  Unfinished planing adz (826)
  5 adz fragments (634, 723, 761, 762, 763)
  3 celts for hatchets or small axlike tools, pl. 6, *g*, and pl. 7, *i* (and 827)
  5 small woodworking tools, pl. 7, *g*, *l*, and pl. 8, *j* (and 828, 957)
  10 hammerstones (508, 599, 649, 670, 707, 712, 724, 823, 933, 939)
  5 hammerstone-abraders (647, 672, 725, 726, 939)
  Pestle or hand hammer (730)
  2 grinding slabs (531, 741), the latter over the two adz blades, pl. 5, *b*, *d*
  2 whetstones (704, 824)
  4 stones with red paint (521, 745, 797, 990)

5 lumps of red paint, pl. 17, *cc*, *dd*, *ee* (and 663, 682)
8 stone lamps, pl. 11, *b*, and pl. 12, *c* (cached together), pls. 11, *e*, 12, *f* (and 677, 734, 735, 947)
Toy lamp, pl. 12, *b*
Broken stone scraper, fig. 11, *j*
2 copper ulo blades, pl. 14, *l* (and 722)
2 drift iron nails, pl. 4, *a*, *f*
2 copper hooks, fig. 18, *j* (and 757)
Opal stone amulet(?) (856)
Incised stone (643)
5 chert chips or nodules (709, 787, 886, 915, 993)
4 coal beads, pl. 17, *o*, *t*, *u*, *w*
8 unfinished coal beads, pl. 17, *y* (and 551, 558, 589, 689, 705, 708, 773)
21 small coal lumps (524, 525, 553, 590, 591, 612, 622, 624, 684, 685, 774 to 778, 796, 829 to 831, 833, 834)
Copper bracelet, fig. 19, *b*
Cut whale bone (1013)
Cut wood (739)

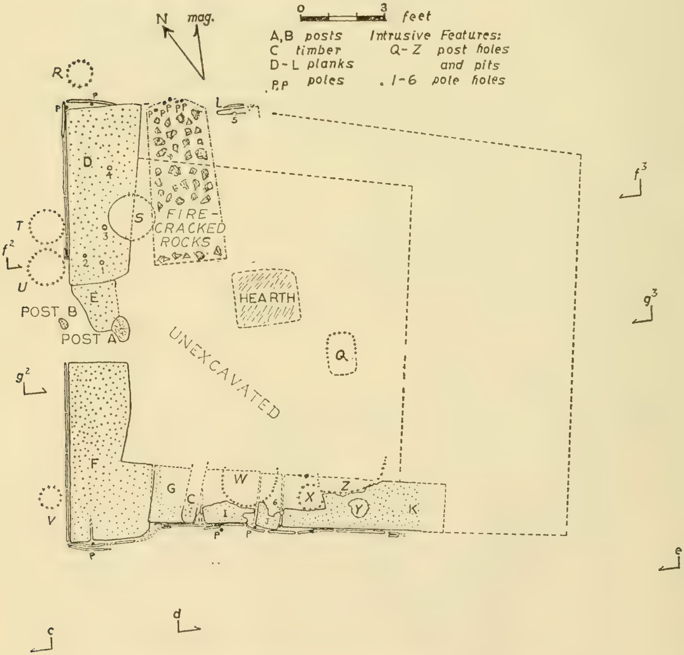
N
mag.
0
3
feet
A,B posts
C timber
D-L planks
P,P poles
Intrusive Features:
Q-Z post holes and pits
1-6 pole holes
R
L
5
D
4
S
T
3
2
1
f²
U
E
POST B
POST A
FIRE-CRACKED ROCKS
HEARTH
UNEXCAVATED
Q
f³
g³
g²
F
G
C
W
I
6
J
X
Z
Y
K
V
e
d
c

FIGURE 7.—Plan of House 9. Drawn by Donald F. McGeein.

HOUSE 9

In trenching through House Pit 1, we discovered the remains of a small burned house in the rectangular depression at the southeastern end of House Pit 1 (map 7), which was evidently younger than the latter. Still later, after House 9 had been burned down, another structure was erected over the remains, as is shown by the numerous holes for poles and posts that perforated the burned planks of House 9. We could not determine the nature of this last building, but believe from the size of the postholes that it must have been very substantial. It was built during the terminal phases of the occupation of Old Town. Since it was impossible to complete the excavation of House Pit 1 and its entranceway, our understanding of these various structures and their relationships to each other is admittedly uncertain.

Unfortunately the carbonized remains of House 9 were found in its western and southern parts (fig. 7). The other end may not have burned, and the timbers there were either removed or allowed to rot, so reconstruction of the house is somewhat tentative. It was about 20½ feet long (northwest-southeast) and about 17 feet wide, although it expanded to a maximum width of 18 feet near the northwestern end. It was built in a pit that had been excavated from the floor of House Pit 1 to a depth of 12 to 18 inches, or about 30 inches below the present surface.

WALLS

Traces of vertical wall planks have been found around the northwestern end of the house. Small poles (*P*, *P*), about 1 to 2 inches in diameter, have been pushed into the sand inside and outside the walls, perhaps to keep the planks from rattling.

A post (*A*), about 13 by 8 inches in diameter, stood 2 feet inside the northwestern end of the house; a smaller post (*B*) was on the line of the wall; both of these were in line with the longer axis of the house. It is not unreasonable to suppose that both (or the larger one) supported a single ridgepole. An intrusive posthole (*U*) has destroyed the last foot or so of wall plank along the floor area (*D*), north of the smaller post (*B*). If this wall plank were restored there would still seem to be a gap in the wall almost 3 feet wide, in the middle of which was the smaller post. The short floor plank (*E*) was evidently inserted after both posts (*A* and *B*) were in place, for it would have been impossible to dig holes for these after the plank was laid. In the reconstruction (fig. 8) the short plank has been interpreted as a sill for a doorway, but the space would seem to be too narrow for an entrance, and the evidence for a ramp is not at all clear. It would be more reasonable to suppose that the entrance

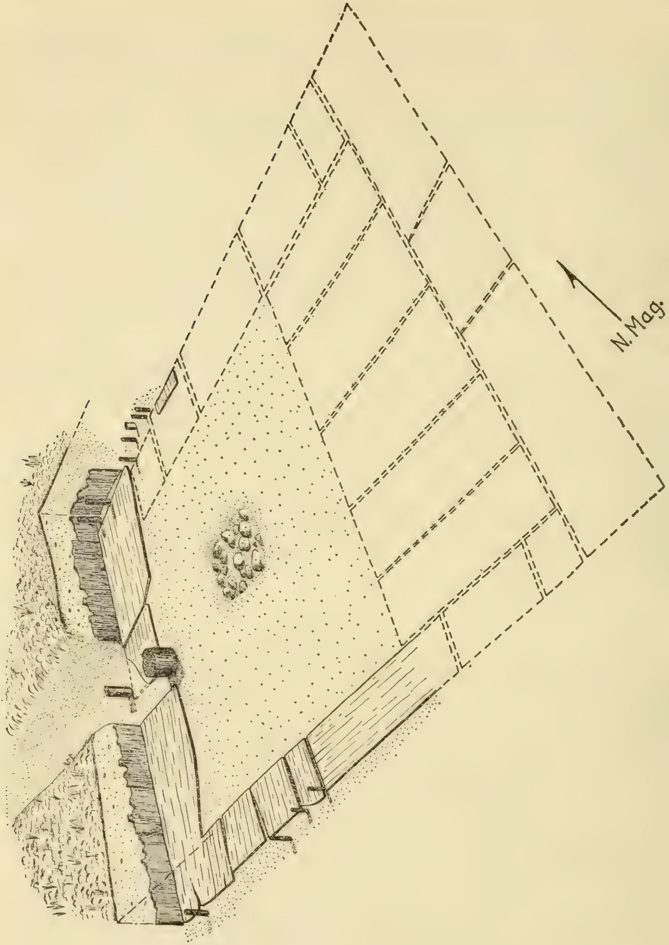

FIGURE 8.—Reconstruction of House 9. Drawn by Donald F. McGeein.

was a hole cut through the wall planks at the opposite end of the house closer to the water. However, the timbers at this end were not preserved, so we do not know how the house was entered. We should remember, also, that temporary openings were made in the back or side of the Tlingit house by removal of one or more wall planks in order to carry out a corpse, since a dead body should not be taken out through the ordinary door.

ROOF

The only evidence for a roof beam or rafter is the timber (*C*) which has fallen into the southern edge of the house. This is about 2 inches thick.

FLOOR

Apparently the center of the floor was not covered with planks, only an area around the walls. This planking was about 2 feet 3 inches wide at the sides, and from 2½ to 3 feet wide at the northwest end. In the reconstruction it has been suggested that the flooring covered a space 6 feet wide at the southeastern end, but there is admittedly uncertain evidence for this. The carbonized planks that were preserved (*D* to *L*) varied in thickness from ¾ to 2 inches. Almost every one had been damaged by intrusive pits (*S*, *W*, *Z*), postholes (*X*, *Y*), or holes for small poles (*1* to *6*).

HEARTH

A concentration of ash, charcoal, and fire-cracked rocks was found in the center of the floor, and was probably the hearth for House 9, where food was cooked. This area was not clearly delimited by slabs of stone.

INTRUSIVE FEATURES

The remains of House 9 had been injured by a number of holes made at a later period, presumably associated with some structure erected over the area after House 9 had burned down. Thus, a number of small holes (*1* to *6*) were made when poles, 2 to 3 inches in diameter, were thrust through the carbonized floor planks (*A*, *J*, *L*) to depths of 2 to 7 inches. A large posthole (*W*), perhaps 20 inches in diameter, had been dug through two planks (*I* and *J*). A nearby plank (*K*) was damaged by a large excavation (*Z*) of undetermined extent, and by two postholes (*X* and *Y*). Outside the limits of the house were postholes (*R*, *T*, *U*, *V*) from 10 to 15 inches in diameter.

The largest intrusive feature was a rectangular bed about 6 inches thick, composed of sandstone fragments similar to the fire-cracked rocks in House 8. The northern end of this layer of orange-red rocks was about 1 foot higher than its southern end. This was not a true hearth for cooking, but a depository of sweat-bath rocks. Possibly this feature was associated with the intrusive postholes and pole holes *1* to *6*. If so, the later structure may have contained a place for sweat bathing, but was probably more than a bathhouse, since some of the intrusive holes were intended for larger posts than would be expected in a bathhouse.

TEST PITS

Two intrusive pits (Q and S) were evidently dug from the present surface of the ground or near it. The first is evidently a test pit dug in 1949, and the latter, which destroyed part of a floor plank (*D*), may also have been made at that time, although unfortunately incomplete records were kept. No carbonized floor planks or other timbers were found in Test Pit Q, nor in the surrounding area, excavated in 1953, which would indicate that this part of the floor of House 9 was not covered with boards.

The following objects were associated with House 9, and belong to the upper levels of Mound B.

Below the floor:
- Drift iron blade for crooked knife, pl. 4, *h*
- Fragment of grinding slab (1004)
- Stone lamp (892)

On the floor:
- Slate scraper (?) (674)
- Broken slate blade for arrow (?) (882)
- Toy bow (?), fig. 16, *b*
- Coal bead (868)
- 4 pieces of cut wood, fig. 24, *f* (and 659, 998, 1001)
- Piece of cut bark (898)

Outside the walls, but within the pit for House 9:
- Copper arrowhead, pl. 14, *e*
- Cut wood (897)

Just above floor:
- Small woodworking tool, pl. 8, *m*
- Hammerstone (854)
- Rubbed stone (955)
- Piece of copper (878)
- Drift iron nail (895)
- Wooden box bottom with copper nails, fig. 23, *c*
- Barbed wooden arrow, fig. 15, *a*
- Wooden shaft fragment (899)
- Unfinished coal bead (932)
- 2 wooden chips (794, 795)
- Piece of cut bark (926)

Fill of House 9:
- 7 hammerstones (648, 650, 750, 853, 857, 935, 937)
- 4 stones with red paint (635, 942 to 944)
- Drift iron nail, pl. 4, *c*

Barbed wooden arrow point, fig. 17, *j*
Wooden arrowshaft (?) fragment (997)
Coal bead, pl. 17, *j*
3 pieces of cut wood (975, 976, 999)

HOUSE PIT 7

Unfortunately not much was learned about House Pit 7, although it was probably the oldest at Old Town. Test excavations in Mound C that extended into the house pit (fig. 9) indicate that it was dug

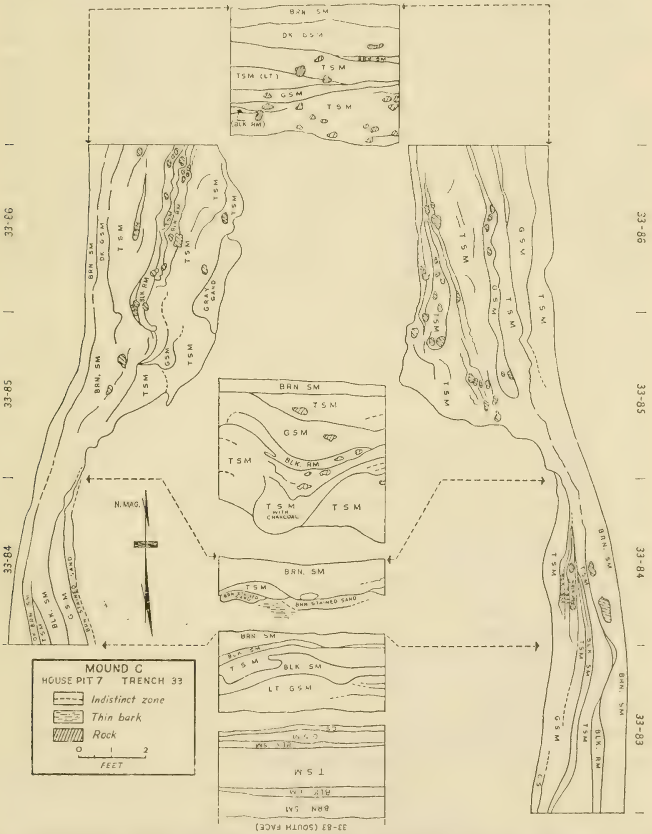
BRN SM
DK GSM
BRN SM
TSM
TSM (LT)
GSM
TSM
(BLK RM)
BRN SM
DK GSM
TSM
BLK RM
GRAY SAND
BRN. SM
GSM
TSM
BRN SM
TSM
GSM
BLK. RM
TSM WITH CHARCOAL
BRN. SM
TSM
BRN STAINED SAND
N. MAG.
DK BRN SM
TSM
BLK. SM
GSM
BRN STAINED SAND
BRN SM
BLK SM
TSM
BLK SM
LT GSM
GS
GSM
BLK SM
TSM
BLK RM
BRN SM
33-83 (SOUTH FACE)
BRN. SM
BLK. SM
BLK. RM
GS
33-86
33-85
33-84
33-83
MOUND C
HOUSE PIT 7 TRENCH 33
Indistinct zone
Thin bark
Rock
0 1 2
FEET

Figure 9.—Cross section of Trench 33, through Mound C and House Pit 7. Redrawn by Edward G. Schumacher from sketch by Donald F. McGeein.

from a surface 12 to 15 inches below the present ground level, to a depth of about 4 feet. The total thickness of the deposits here is about 58 inches. Although the pit is shallow and indistinct in outline, it seems to be about 50 feet square, the same size as House Pit 1. Unfortunately, no trace of timbers was found, although the edge of Mound D was cut off in a straight line as if it had been piled up against the wall of the house. If a house had been built in the pit, it was considerably deeper than any others discovered. Although a number of fire-cracked rocks were found in House Pit 7, there were no concentrated strata of black rocky midden or of shell. The absence of shell and the consequent acidity of the soil undoubtedly explain why no objects of bone or of wood were found in the house pit. That House Pit 7 is the oldest discovered at Old Town is suggested by the large trees growing in it and on Mound C.

As in the case of House Pit 1, no artifacts were found on the floor of the pit, suggesting that the house had been kept clean. We have already commented on the relatively neat housekeeping habits of the Tlingit at villages as opposed to forts and campsites, and on the contrast between house pits and trash mounds (de Laguna, 1953, pp. 54 f.). The only artifacts found in House Pit 7 came from the fill.

Fill of House Pit 7, below 24 inches:
- Unfinished planing adz blade, pl. 6, *h*
- 3 adz fragments (806, 807, 819)
- 8 hammerstones (752, 798, 799, 801, 820, 846 to 848)
- Hammerstone-abrader (800)
- Quartz strike-a-light (835)
- Abrading stone (845)
- 3 pieces of worked greenstone (805, 804, 808)
- 5 chert chips (729, 803, 837, 838, 843)
- Fragment of worked slate (842)
- Amulet (?) of crystalline rock (802)

Fill of House Pit 7, above 24 inches:
- Small planing adz (769)
- Adz fragment (711)
- 3 small woodworking tools (765, 767, 810)
- 2 hammerstones (751, 753)
- Whetstone (809)
- 3 slate arrowheads, fig. 14, *g* (and 767, 768)
- Copper pin or tang, pl. 14, *f*
- Sawed slate (811)
- Worked greenstone (720)
- Worked slate pebble (728)
- 13 chert chips (721, 727, 782 to 786, 788 to 793)

RECENT HOUSES

Sixty to seventy-five years ago the natives along the Gulf Coast of Alaska were living in old-style rectangular plank houses with gable roofs. Our Yakutat informants did not agree on details, probably because the houses they remembered varied not only in size and in related features of construction, but because they also possessed individual peculiarities, some of which were lineage prerogatives. Furthermore, some descriptions seem to reflect more recent styles in construction. There were evidently large multifamily lineage houses and somewhat smaller houses of the same kind, as well as small dwellings for perhaps a single family. In addition, there were smokehouses for curing fish, some of which also served as residences during the fishing season, and there were flimsy huts erected at hunting camps.

The large lineage house was described as about 40 by 60 feet, or as almost square. It was erected in a pit 3 to 4 feet deep. There was usually a wooden bench about 4 feet wide that ran around the four sides of the house at or near ground level. Behind the bench and also on the same level were a series of small boxlike rooms, their ceilings reaching the eaves of the house at the sides and forming a high platform. The largest houses had such rooms on all four sides, except in the middle of the front end where the door was located. Other houses had three or four rooms across the back and an equal number down each side, but none at the front. Still others had rooms only across the back, and perhaps on each side of the door. Similarly, the bench might run only across the back. The smallest houses, perhaps less than 20 feet square, had only a single sleeping room in a rear corner and lacked the bench. All (?) houses are said to have been erected in a pit.

In the larger houses, the single room or pair of rooms in the center of the rear were the sleeping quarters of the house chief and his wife or wives, and perhaps of his brother and the latter's wife or wives. The partition in front was often painted with the totemic crests of the lineage. Less important families occupied rooms along the sides. The front rooms on each side of the door were for clansmen who had no other place to live, that is, poor relations who had to do menial work. The corner rooms at the back were mentioned by some informants as serving for storage. Sometimes a room by the door was used for sweat baths, but this was apparently only in some of the smaller houses, since the chiefly owners of the large houses also owned separate sweat-bath houses. Boys and slaves slept on the benches in front of the sleeping rooms, as did married men when magical taboos required sexual abstinence. Some unmarried youths and girls might occupy sleeping rooms, but the high-class girls, chiefs' daughters, are said to have slept on the platform above the rear rooms. Access was gained by a notched ladder, which was removed at night and guarded by a slave to prevent any of the boys from climbing up. Supplies not kept in a cache outside (see below) might be stored on top of the rooms (at the sides of the house?), in a corner room, or in lockers under the bench. These lockers were equipped with wooden doors hung on heavy leather hinges. One informant spoke of sleeping cubicles under the bench. Not all houses, however, had spaces below the bench; sometimes this area was not even excavated. If there were a shaman in the household, one small room was reserved for his use. This was called the "drum room," probably because here he kept the less dangerous part of his equipment, and here he might perform some of his cures.

Windows of bear gut sewn with porpoise sinew were mentioned, and probably served to admit some light to the small rooms. In addition, stone lamps were used for illumination. Beds in the rooms were described as made of piles of ryegrass(?), 2 feet thick, held in place by boards at the sides. On top of this mattress were laid feather beds (copied from the Whites), commercial blankets, and robes of fur or of swanskin. Other furnishings in the houses included wooden boxes used for storage and as seats, cooking boxes, baskets, urine boxes, and pegs in the walls from which articles were hung.

Informants agreed that the walls of these houses were almost always made of vertical planks, usually set into the ground. One house in Controller Bay had a frame or sill of timbers around the bottom, grooved to hold the lower end of the wall planks, but this seems to have been an unusual feature. The upper ends of the wall planks on each side fitted into a square grooved beam at the eaves. Informants disagreed, however, as to whether these two eaves beams were supported entirely by the wall planks, or whether they were held up by posts in the four corners of the house. Such corner posts were said to have been notched at their upper ends to receive the eaves beams. These posts were probably necessary in large houses, but may have been omitted in the small ones.

Informants also differed in describing the construction of the gable ends of the house. One man, who was perhaps thinking of a rather recent style, influenced by White men's houses, said that beams were laid across the front and back of the house, resting on top of the eaves beams at the sides. These crossbeams were grooved below for a lower tier of vertical wall planks, and also above for an upper tier in the gable ends. The upper ends of the second tier fitted into grooves in the pair of rafters that formed the gable. This high, steep-pitched roof would have been like that of the modern lineage houses of frame construction erected in the early decades of the present century, in which commercial lumber and ordinary doors and windows were used, and we think that the informant is confusing this modern style with the older one. Other informants maintained that the gabled roof of the old house was almost flat, and that only a single tier of vertical planks was used at the front and back. The upper ends of these planks fitted directly into the grooved rafters of the gable. The Controller Bay house is said to have had a huge curved beam to form the gable end, but, again, this seems to have been a unique feature.

In addition to the usual style of house with vertical wall planks there is a tradition of a different "sidewise" construction, apparently involving horizontal wall planks. This may have been a prerogative of the Tł'ʊknaxᴀdi sib of southeastern Alaskan origin, since one of their lineage houses has been traditionally named "Sidewise House." (Drucker, 1950, Trait 317, reports this from the Chilkat.)

The doorway was a round or oval hole cut in the gable end of the house that faced the water. It was several feet above the ground outside, so that a pair of steps was necessary to reach it from outside, and about eight steps led down to the excavated floor. Some houses might have a raised porch across the front of the house. The door itself was of wood, and could be secured on the inside with a wooden bar. The front wall of the houses was not decorated at Yakutat, except for one house built in 1918 at Lost River and ornamented with the painted carvings of two brown bear paws. There was usually no totem pole in front; the only one mentioned was at Diyaguna'ᴇt. The corner posts did not rise above the level of the roof and were not decorated. These features seem to be characteristic of southeastern Alaska.

The roof of the larger house was supported not only by the two beams at the eaves but by two great ridgepoles that rested in the notched ends of four large posts. The latter stood at the inner corners of the bench, that is, well inside the walls of the house. The ridgepoles reached the front and back walls but did not protrude beyond them. These posts were not round, but were convex on one side and hollowed out on the other. In a lineage house two or all four might be carved and painted on the convex surface with totemic crests (shark, raven, bear, moon, and so forth), reflecting the name of the house. The posts might further be decorated with inlays of bone, ivory, or metal (copper or "silver"), and with human hair. When a new lineage house was built, the decorated posts would be salvaged from the old one. In the most recent of the old-style houses these old posts were not used to support the roof, but were set up as decorative shells in front of the functional posts.

Informants disagreed as to whether intermediate beams, in addition to the twin ridgepoles and the two at the eaves, were necessary for the roof, and also how these beams were supported if they were used. According to one man, a pair of intermediate beams rested on posts at the front and back of the house. (This seems unlikely, since Drucker, 1950, Trait 312, reports this construction only from the

Tsimshian and Haida, not from the Tlingit.) Another informant reported that rafters, about 6 inches in diameter, were laid across the ridgepoles and eaves beams on each side of the house. The eaves beams were notched or grooved at an angle to hold the ends of these rafters. On top were a series of longitudinal planks, parallel to the sidewalls of the house, to support the roof planks proper. Another informant denied such rafters, although his account was not clear, and it is likely that the longitudinal planks or poles (corresponding to intermediate beams) rested either on the wall planks at the ends of the house, or on the gable rafters.

The gable roof itself was made of two layers of planks, those on top laid to cover the cracks between the planks below. These boards are said to have been about 12 inches wide and 2 inches thick. On a large house three sets might be necessary to reach from the ridge to the eaves; on a small house perhaps a single set would be enough. These planks were held down by horizontal logs or poles, laid parallel to the eaves and ridge. One informant said that they were lashed on by spruce root ropes. Another insisted that no lashings were used, but that they were secured by wooden pegs set into drilled holes that penetrated both the poles and the roof planks below. If no pegs were used, the logs were held in position by short poles that ran down the roof between them, with a longer set of poles running between the lower log and the ground at the sides. At the ridge, the roof planks on one side projected above those of the other to shed the rain.

A small house had a gable roof, but this was supported by a single ridgepole. Again, informants disagreed as to whether the latter rested on a post at each end or on the wall planks, and also as to whether or not extra beams and posts were used between the ridgepole and the beams at the eaves.

While one informant denied the existence of a smoke hole in the roof and said that the cracks between the roof planks provided sufficient ventilation, others insisted that all houses had a smoke hole in the middle of the roof. This was equipped with a movable screen or shutter, which could be tilted from one side to the other, depending on the direction of the wind. Since two names for the windscreen were given, there may have been two types. The more modern (?) type, observed on an abandoned smokehouse, was a flat, square plank affair, fastened to a pole that ran longitudinally down the middle of the smoke hole like a ridgepole. This pole could be rotated and the screen tilted by pulling on one of a pair of ropes that hung down inside the house. The older (?) type of screen was said to have lacked ropes. Instead, someone had to climb onto the roof by means of a notched log ladder and push the screen by hand.

The main room of the house was heated and illuminated by a large fire in the center of the house. In this, large logs were burned, being fed slowly into the blaze. The fire also served for cooking. One informant said that the fireplace was a shallow pit filled with clean sand. Another described the hearth as raised 6 to 12 inches above the floor, with plank sides and a filling of rocks and crushed shells. The rocks radiated heat after the fire was allowed to go out, and the shells were for looks. While most of our informants spoke only of a single fireplace, two others said that a large house might have two hearths, one on each side of the center of the house. Another man said that after all the fish had been smoked and put away, the fire in the center was extinguished and two fires, one on each side, were lighted for extra warmth in the autumn. This was called "pushing the fire to the side of the house." However, one of our best informants insisted that double hearths were used only in the smokehouses for curing fish, and we believe, therefore, that these reports of twin fireplaces refer to houses that were used both as dwellings and as smokehouses, and not to the regular winter residences.

The floor of a large house was covered with planks, whereas in a small house a part of the floor might be left bare, especially if the owner could not afford to plank it completely.

The sweat bath was sometimes in a room in the front of the house, sometimes in an annex to the house, and sometimes in an entirely separate structure. It might or might not have its own fireplace where the rocks were heated. The roof of the bathhouse was said to have been made of bark. There was a small hole for ventilation (in the roof?), called the "eye" of the house. The bathhouses of chiefs were large, apparently as big as House 8, because these served as meeting places for the prominent men of the village. The various house chiefs would take turns in giving sweat baths in the evenings. The men would discuss village affairs, tell stories or myths, and recount adventures. Sometimes people slept in the bathhouses. The older women, too, used to make communal sweat bathing a social event.

Behind the houses were usually one or more cache houses for provisions (see below).

Some villages were surrounded by fortifications built of posts set close together, with only one narrow opening left for entrance and exit. After the natives had obtained guns some of the sealing camps were fortified with stone walls in which holes were left to shoot through.

At hunting camps the Yakutat people erected huts of bark or of "shakes," that is, small planks. Those photographed by the Harriman Alaska Expedition in 1899 at the sealing camps above Point Latouche (see Grinnell, 1901, vol. 1, pp. 159, 161, 163, and pl. opp. p. 160) were built like small gable-roofed houses, about the size of the ordinary canvas wall tents that were used at the same camps. There seems to have been a smoke hole in the roof, sometimes equipped with a windscreen. The sheets of bark were laid over a light framework of poles, and might run either vertically or horizontally for the walls. The bark was held down by poles, oars, or sealskins stretched in their drying frames. The door at the front was a blanket or piece of canvas.

At fishing camps the Yakutat people had smokehouses which not only served to cure the catch but to house the owners. There were separate sleeping rooms in some, and such houses must have been very similar to the smaller houses at the winter villages. Modern smokehouses have either a single ridgepole or twin ridgepoles, although the people live in separate shacks at the fish camps. Whereas the older smokehouses have movable windscreens, modern ones usually have fixed chimneylike types of wood built around the smoke holes, probably copied from the Russians. In the old days there was a false ceiling inside over the fire to spread the smoke and catch the soot, and above this were several tiers of drying racks. Most modern smokehouses lack the false ceiling.

An informant described caches in the Situk-Lost River area of about 1850 to 1885. These were big holes in the ground, dug deep so that the food inside would not freeze, and were shored up or lined with logs so that sand would not cave in. Over the pit was a tentlike roof of planks, with a small entrance at one end. A ladder was used to reach the bottom of the cache. Such storehouses were built behind the dwellings.

A second informant said that caches in the Dry Bay area, dating from about 1900, were only 1 foot deep. Logs were put around the sides, like a log cabin. The roof of bark was sometimes arched as on a Quonset hut, 5 feet high. Walls and roof were covered with mud to protect the contents of the cache from the cold.

Both informants agreed that each housewife in the multifamily dwelling had her own space in the cache where she kept her bundles of dried fish and boxes of meat and berries preserved in seal oil. These descriptions would explain many of the pits at Knight Island and at other sites.

We were also told that when eulachon were caught, the fish were put into pits lined with leaves to keep out the sand, and were allowed to rot a little, otherwise the oil, when rendered in a dugout with hot rocks, would not keep. This explanation might serve for some pits on Lost River and Situk River, where there were eulachon runs, but probably not for any on Knight Island, which was perhaps too far from any fish stream. Salmon heads and fish eggs were, however, often buried in the ground to ferment.

COMPARISONS

The large Yakutat multifamily houses, described by our informants and apparently represented by House Pits 1 and 7, were very similar to the ordinary Tlingit lineage houses of southeastern Alaska (Krause 1956, ch. 4; Niblack, 1890, pp. 305 f., pl. xxxv, figs. 174–176, 178; Drucker, 1950, pp. 178 f.), even though the Yakutat house differed in some details of construction. Thus, it was always (?) in a pit, not at ground level; there was a single bench around the walls, not a series of steplike benches; there was no grooved frame to hold the bottom of the wall planks; there was almost never any external decoration. The southeastern Alaskan Tlingit house would, however, appear to be the model copied at Yakutat.

In many respects the larger multifamily dwelling houses of the Copper River Delta Eyak were similar (Birket-Smith and de Laguna, 1938, pp. 32–43). Thus, they had vertical wall planks, central fireplace and smoke hole with movable screen, plank floor, boxlike sleeping rooms, etc. However, like many Tlingit and Kwakiutl houses, and like the standard houses of the Haida and Tsimshian, the wall planks of Eyak houses were fitted into a grooved frame at the bottom. Furthermore, Eyak houses were not apparently erected in or around a pit. It is not clear whether the Eyak "potlatch house," of which there were said to have been two in each village, are to be considered as an older form of festival and guesthouse that had been supplanted on the Northwest Coast when the lineage house became large enough for such functions, or whether (more likely) these Eyak "potlatch houses" were simply the residences of chiefs (Birket-Smith and de Laguna, 1938, p. 374). Despite inconsistencies in our data, we gather that these so-called "potlatch houses" were like lineage houses in a number of features. They might have totem poles at the front, walls of double height (probably like the Yakutat house with two tiers of wall planks at the gable ends), and totemic paintings on the fronts of lockers under the bench, especially those at the rear. These "lockers" may actually have been sleeping rooms, and the decorations seem to be the equivalent of the painted rear screen in Tlingit and Yakutat houses. However, no interior carved posts were mentioned.

The feature which most clearly distinguishes the larger Eyak house from Yakutat and Tlingit houses of comparable size is that all Eyak houses had only the single ridgepole. In this respect, they resembled the smaller Yakutat houses, described by our informants and suggested by House 8 and House 9. Since the single ridgepole becomes far more common than the twin ridgepoles on both the northern and southern peripheries of the Northwest Coast and even beyond, it has been argued that the former was the older type (de Laguna, 1947, pp. 110 f). The shed-type house of the southern Nootka, Makah, and Coast Salish, of course, interrupts the distribution of the gable roof. Because the northern and central Nootka used only the single ridgepole, and the southern Kwakiutl favored it over the double ridgepole (Drucker, 1950, Traits 308 and 311), while the Heiltsuk (northern Kwakiutl) of Roscoe Inlet used the single ridgepole in the early historic period (Drucker, 1943, fig. 24), we may assume that the double ridgepole was first used for plank houses by the Tlingit, Haida, or Tsimshian. In fact, the multifamily house requiring or associated with this type of construction seems to have been diffusing from this center, and the evidence from Yakutat indicates that it had already reached this northern area at least by late prehistoric times. It would be natural to relate this diffusion to the spread of Tlingit social and ceremonial customs, which was still in progress in the protohistoric period (see pp. 9–10).

Unfortunately we have no early archeological evidence from Yakutat of the small house with single ridgepole. House 9 is the only dwelling that suggests this type and it is later than House Pit 1. However, the bathhouse (or birth house), House 8, is so similar in construction, that we may safely infer that the small house with single ridgepole, and probably without bench or separate sleeping rooms, was being built at the same time as the large lineage house. The small house for one or two families was also known from the Eyak, and may anciently have existed all over the northern Northwest Coast before the development of the more elaborate larger dwellings, just as it seems to have lingered on for poor people even in regions where the latter multifamily house became common.

Boxlike sleeping rooms with wooden walls would seem to be also a relatively late development, and indeed in most Northwest Coast houses only the chief and members of his immediate family usually enjoyed such privacy. Ordinary people seem to have been content with a low board or partition of mats, or piled up their belongings to mark off their sleeping places (Drucker, 1950, Traits 345 and 346, p. 251). These simpler contrivances, which also have a wider distribution, suggest earlier patterns. The use of movable partitions was, however, advantageous when the benches were cleared to accommodate crowds of spectators at a ceremony.

Another probably ancient feature was the use of vertical wall planks. The setting of these into the ground would seem to be not only simpler but more widespread and presumably earlier than fitting them into a grooved frame or sill. In fact, "insertion of the planks in bottom and top logs has a far more limited distribution than the use of vertical timber as a whole, being, as it seems, confined to the northernmost and most civilized peoples of the Northwest Coast" (Birket-Smith and de Laguna, 1938, p. 367). Such arrangements were lacking among the Nootka and southern Kwakiutl, for example (Drucker, 1950, Trait 314), as well as among completely marginal groups like the Yurok and Karok of northwestern California (Kroeber, 1925, pp. 78 ff., pls. 9–11). In the area of shed-type houses the construction was so different as to prevent comparison with the types under discussion.

Storage houses were not very common on the Northwest Coast, because the huge lineage dwellings offered ample room for the accommodation of supplies. The Chilkat, for example, owe their name (tciłqat) to their custom of erecting aboveground fish caches like those characteristic of the interior (Krause, 1956, pp. 90 f., note 5). No information was obtained from the Copper River Eyak about any form other than temporary platform caches (Birket-Smith and de Laguna, 1938, pp. 44 f.). On the other hand, Drucker (1950, Trait 365, p. 252) reports of the Chilkat: "The type of storehouse for roots, berries, etc., was a semisubterranean structure, rectangular with pole walls, gabled roof covered with poles, bark, and earth, rather than a simple pit, as were other caches of this type." Subterranean earth-covered caches (ibid., Trait 370, p. 252) were used by the northern Kwakiutl, Bella Coola, Tsimshian, Haida, Cape Fox, and Chilkat Tlingit, but not farther south. "Boxes of olachen grease, berries, etc., to which repeated changes of temperature would be injurious, were kept in pit caches, well covered with earth." Clover and cinquefoil roots were thus stored by the Kwakiutl proper. We are not certain, however, how similar these pit caches may have been to the Yakutat storage houses and caches. In recent years, root cellars for storing potatoes were observed at a number of summer camps near Angoon (de Laguna, 1960, pp. 45, 51, 54). Those still standing were rather substantial log structures built over a pit and covered with earth.

Whereas salmon roe or fish heads were frequently stored in pits lined with bark or leaves by the Gitksan, Haida, Tlingit, Nootka, Copper River Eyak, Tena, and Tanaina (Drucker, 1950, Trait 114, p. 241; Birket-Smith and de Laguna, 1938, pp. 96, 445), this is not so much a method of storage as of preparation through rotting or fermentation, and it does not require more than an ordinary pit.

The nearest archeological parallels to the Knight Island Storage House seem to be the four rectangular semisubterranean fish storage pits at the early historic site of Pedro Bay on Lake Iliamna. One of these when excavated measured 5 by 5 feet and was 4 feet deep (Townsend and Townsend, 1961, p. 32). The "cellar" visited by Steller on Kayak Island in 1741 may have been a large Chugach cache like the Storage House (Birket-Smith and de Laguna, 1938, pp. 346 f.).

Analysis of ethnological data, which we have attempted in default of comparable archeological information, can, of course, only suggest the relative antiquity of features of house construction. The houses of the Northwest Coast, of the Pacific Eskimo, and of the peoples of the adjacent hinterland, as they are known to us ethnographically, seem to combine to varying degrees particular features of construction which we suspect to be of different ages and that presumably diffused at different rates. Obviously the only sure method of disentangling the complex history of house building on the Northwest Coast is through extensive and painstaking excavations, as yet not undertaken in the most critical areas.

ANALYSIS OF FAUNAL REMAINS FROM OLD TOWN, KNIGHT ISLAND

By J. Arthur Freed and Kenneth S. Lane

All unmodified faunal remains were recovered whenever possible during the excavations on Knight Island. A type collection of mammal bones was made during the first excavation season. This facilitated field identification of all but unusually difficult specimens which were studied in Berkeley. This was carried out by J. A. Freed during 1952 and by K. S. Lane in 1953. F. A. Riddell identified molluscan material with the aid of a type collection taken to Yakutat. Fishbone was generally in poor condition and not recoverable. For this reason the collections give no indication of the important role of fish in the native diet. Bird remains were quite uncommon at the site, and those found could not be identified.

Complete listings of the mammalian and molluscan remains from Old Town are given in the tables at the end of this section. Frequencies of unmodified animal bones and depth information about bones and shells are derived from certain test areas in each mound, although material from all the excavated areas was examined. The special test areas were as follows: Squares 30–27 and 30–28 in Mound A, Squares 41–58 to 48–58 in Mound B, Squares 32–83 and 33–83 to 33–86 in Mound C, and Square 27–92 in Mound D. Except in a few cases noted in the tables, vertebrae, ribs, podials, and phalanges were not included in the count, because it was felt that any errors resulting from this deliberate omission would be insignificant and because this technique permitted the handling of more material than would have been possible otherwise. Generic names are used when feasible. Broader terminology, such as "rodentia," "whale," and "porpoise," is employed when more exact identification cannot be made.

By far the most important single mammal for the inhabitants of Old Town was the hair or harbor seal (*Phoca richardii*) represented by a total of 779 bones from the test areas that perhaps came from 73 to 81 individual animals. The seal is still very common in the waters around Knight Island, and it will be remembered that after the abandonment of the site as a permanent town it was still used as a camp by seal hunters.

Next in importance was the porpoise, as is indicated by 128 bones from the test areas, probably representing 19 to 23 individuals.

Only in the test areas of Mound D were porpoise bones more numerous than those of the seal. This may be explained because porpoise vertebrae could be kept and counted, owing to their distinctive character, while other parts of the animal do not seem to be preserved as well. Although there were remains of five or six seals in this mound, there were four porpoises represented, and an equal number of mountain goats. The natives report that porpoise meat was considered inferior to that of the seal since it produced an offensive body odor, and it is said to have been eaten only by the families of poor hunters.

The mountain goat (*Oreamnos kennedyi*) was next in importance. being represented by 32 bones from the test areas, possibly indicating 13 individual animals. The Yakutat natives were ardent goat hunters, and used the tallow not only for special feast dishes but for cosmetic purposes. Had the site been on the mainland farther up Yakutat Bay, we might have found more mountain goat remains.

The sea otter (*Enhydra lutris*) is represented by only 11 bones, indicating 4 to 7 individuals, and was not present at all in Mound C. In former times the sea otter was common in Yakutat Bay, although Khantaak Island, rather than Knight Island, was mentioned as a center for sea otter hunting. It is clear that had there been sufficient inducement the inhabitants of Old Town could have caught far more sea otter than they did. Evidently they were not yet influenced by European demand for sea otter pelts. The scarcity of sea otter bones at the late prehistoric site of Old Town is in great contrast to their relative abundance at the early historic site of Daxatkanada in the Angoon area (de Laguna, 1960, p. 93).

Other animals found at Old Town were the land otter, black bear, beaver, hoary marmot, muskrat, "whale," and domestic dog, although these were represented by relatively few bones. It is surprising that the black bear was so uncommon and that the brown (Kodiak) grizzly was not found at all, since both types are now plentiful on the mainland near the island and the natives evidently attached a good deal of importance to hunting these animals. The difficulty of carrying bear meat weighted down with heavy bones, together with magical rules about proper disposal of bear bones, may explain why so few were found in the trash mounds. On the other hand, it is astonishing to find any remains of the land otter, since this animal was not purposely hunted and was in fact avoided because of its imagined supernatural powers.

Analysis of the seal bones which occurred in the site, as shown in table 2, indicates that the entire carcass was brought to the village for butchering. Blows on the skull in killing may explain the relative paucity of identifiable skull fragments, though the hard and easily recognized auditory bullae are not uncommon.

The most common shellfish at Old Town were the blue mussel (*Mytilus edulis*), the smooth Washington clam (*Saxidomus giganteus*), the common Pacific littleneck (*Protothaca staminea*), and the sea urchin (*Strongylocentrotus purpuratus*). Also present in the site were the shield limpet, the puppet margarite, the Oregon triton, a dogwinkle, Nuttall's cockle or the basket cockle, the Pacific gaper, and a barnacle. Scientific names for these species are given in the tables indicating their occurrence.

TABLE 1.—*Occurrence of unmodified mammal bone* [a]

Mammal	Mound A	Mound B	Mound C	Mound D	Total
Phoca richardii (hair or harbor seal)	128 (13–20)	627 (51–59)	8 (4)	16 (5–6)	779 (73–81)
Phocoena sp. (porpoise)	12 (4)	86 (10)	7 (4)	23 (4)	128 (19–23)
Oreamnos kennedyi (mountain goat)	3 (2)	22 (6)	1 (1)	6 (4)	32 (13)
Enhydra lutris (sea otter)	3 (1–2)	6 (1–3)		2 (2)	11 (4–7)
Lutra canadensis (land otter)		2 (1–2)			2 (1–2)
Castor canadensis (beaver)		3 (1)			3 (1)
Marmota caligata (hoary marmot)		1 (1)			1 (1)
Ondatra zibethicus (muskrat)		×			×
Rodentia				1 (1)	1 (1)
Ursus americanus (black bear)		×			×
Whale		×		1	1 (2?)
Canis familiaris (domestic dog)	2 (1)				2 (1)

[a] Numbers indicate the bones removed from the test areas. Numbers in parentheses indicate the probable number of individuals represented. × indicates that remains were found in the mound, but not in the test areas, and that no numerical count was recorded.

TABLE 2.—*Frequency of unmodified mammal bones, by type and depth, in the test areas*

Test area	Depth in inches	*Phoca* (seal)																											
		Skull fragment	Bulla, auditory, left	Bulla, auditory, right	Bulla, auditory, indeter.	Maxilla, left	Maxilla, right	Maxilla, indeter.	Mandible, left	Mandible, right	Scapula, left	Scapula, right	Humerus, left	Humerus, right	Humerus, indeter.	Radius, left	Radius, right	Ulna, left	Ulna, right	Innominate bone, left	Innominate bone, right	Innominate bone, indeter.	Femur, left	Femur, right	Tibia, left	Tibia, right	Fibula, indeter.	Astragalus	Calcaneus	Total
Mound A	0–6	----	2	2	----	----	----	----	----	1	----	----	2	4	----	3	----	----	1	1	----	----	1	2	----	2	----	----	----	21
	6–12	----	4	1	3	----	----	----	1	----	3	2	5	2	----	2	2	----	1	1	2	1	1	4	3	3	2	1	2	46
	12–18	----	4	8	----	----	----	1	1	----	1	1	6	3	----	6	2	2	2	1	----	1	4	7	4	1	1	----	----	56
	18–24	----	2	1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	3
	24–30	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	1	----	----	----	1	----	----	2
Total	--------	----	12	12	3	----	----	1	2	1	4	3	13	9	----	11	4	2	4	3	2	2	7	13	7	6	4	1	2	128
Mound B	0–6	1	1	5	----	----	----	----	----	----	----	----	6	4	1	----	----	2	1	2	----	----	2	1	4	3	----	----	----	33
	6–12	----	5	6	7	----	1	----	1	2	3	2	8	5	----	3	1	1	1	1	2	----	6	8	4	3	2	----	6	78
	12–18	----	17	20	1	2	1	----	15	9	12	10	20	17	----	18	13	11	9	10	8	1	14	24	19	12	7	9	13	292
	18–24	----	10	8	----	----	2	1	2	4	9	11	15	10	----	5	9	7	8	8	3	4	13	10	12	8	8	4	1	172
	24–30	----	1	1	1	1	----	----	2	1	3	2	1	5	----	3	----	2	3	2	4	----	3	3	1	3	2	1	----	45
	30–36	----	----	2	----	----	----	----	1	----	----	----	1	----	----	1	1	----	----	----	----	----	----	----	----	----	----	1	----	7
Total	--------	1	34	42	9	3	4	1	21	16	27	25	51	41	1	30	24	23	22	23	17	5	38	46	40	29	19	15	20	627

Mound C	0-6	----	----	1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	1
	6-12	----	1	1	----	----	----	----	1	----	----	----	----	----	----	----	----	----	----	1	----	----	----	----	----	----	1	----	----	5
	12-18	----	----	----	1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	1
	18-24	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	------
	24-30	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	------
	30-36	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	------
	36-42	----	----	----	1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	1
	42-48	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	------
Total		----	1	2	2	----	----	----	1	----	----	----	----	----	----	----	----	----	----	1	----	----	----	----	----	----	1	----	----	8
Mound D	0-6	----	2	----	----	----	----	----	----	----	----	----	1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	3
	6-12	2	----	----	----	----	----	----	----	----	1	1	----	----	----	----	----	----	----	----	----	----	1	----	----	----	----	----	----	5
	12-18	1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	1	----	----	----	----	----	----	----	2
	18-24	1	----	1	----	----	----	----	----	----	----	----	----	----	----	1	----	----	----	----	----	----	----	1	1	----	----	----	----	5
	24-30	----	----	1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	1
Total		4	2	2	----	----	----	----	----	----	1	1	1	----	----	1	----	----	----	----	----	1	1	1	1	----	----	----	----	16
Site total		5	49	58	14	3	4	2	24	17	32	29	65	50	1	42	28	25	26	27	19	8	46	60	48	35	24	16	22	779

TABLE 2.—*Frequency of unmodified mammal bones, by type and depth, in the test areas*—Continued

Test area	Depth in inches	*Phocoena* (porpoise)						*Enhydra* (sea otter)										*Oreamnos* (mountain goat)															
		Skull fragment	Bulla, auditory	Mandible, right	Vertebra	Fragment	Total	Maxilla, right	Maxilla, indeter.	Mandible, left	Humerus, left	Ulna, left	Ulna, right	Innominate bone	Femur, right	Tibia, right	Total	Maxilla, left	Mandible, left	Teeth	Horn	Radius, left	Radius, indeter.	Ulna, right	Innominate bone	Femur, right	Tibia, left	Metapodial	Astragalus	Calcaneus	Carpal	Phalanx	Total
Mound A	0–6										1					1	2																
	6–12	1	5		3		9																		1							1	2
	12–18							1									1																
	18–24		2				2																					1					1
	24–30				1		1																										
Total		1	7		4		12	1			1					1	3								1			1				1	3
Mound B	0–6	2	4		3		9																										
	6–12		5		6		11		1						1		2					1							1	1		1	4
	12–18	[a]2	3	1	32		38			1		1					2		1		1								1	1		3	7
	18–24	1	3	1	14		19						1	1			2							1	1	3	3					1	9
	24–30				8		8											1														1	2
	30–36				1		1																										
Total		5	15	2	64		86		1	1		1	1	1	1		6	1	1		1	1		1	1	3	3		2	2		6	22
Mound C	0–6					1	1													1													1
	6–12		1		1		2																										
	12–18				2		2																										
	18–24																																
	24–30		1				1																										
	30–36																																
	36–42																																
	42–48					1	1																										
Total			2		3	2	7													1													1
Mound D	0–6		1		3		4																1										1
	6–12		1		4		5																										
	12–18				3		3							1			1			1												1	2
	18–24	1	2		5		8					1					1														1	1	2
	24–30		1		2		3																					1					1
Total		1	5		17		23					1		1			2			1			1					1			1	2	6
Site total		7	29	2	88	2	128	1	1	1	1	2	1	2	1	1	11	1	1	2	1	1	1	1	2	3	3	2	2	2	1	9	32

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[a] Includes a porpoise skull, in Square 46-58, 12–24 inches.

TABLE 2.—*Frequency of unmodified mammal bones, by type and depth, in the test areas*—Continued

Test area	Depth in inches	*Lutra* (land otter)		*Castor* (beaver)			*Marmota* (marmot)	Rodentia	*Canis* (dog)		Whale
		Mandible, left	Os penis	Mandible, right	Scapula, right	Innominate bone, right	Scapula, right	Tooth	Femur, right	Tibia, right	Fragment
Mound A	0–6										
	6–12										
	12–18										
	18–24								1	1	
	24–30										
Total									1	1	
Mound B	0–6	1									
	6–12										
	12–18		1	1	1	1	1				
	18–24										
	24–30										
	30–36										
Total		1	1	1	1	1	1				
Mound C	0–6										
	6–12										
	12–18										
	18–24										
	24–30										
	30–36										
Total											
Mound D	0–6										
	6–12										
	12–18										
	18–24							1			1
	24–30										
	30–36										
	36–42										
	42–48										
Total								1			1
Site total		1	1	1	1	1	1	1	1	1	1

Total number of animal bones from test areas

Test area	Depth in inches	Number of bones
Mound A	0–6	23
	6–12	57
	12–18	57
	18–24	8
	24–30	3
Total		148
Mound B	0–6	43
	6–12	95
	12–18	344
	18–24	203
	24–30	55
	30–36	8
Total		748
Mound C	0–6	3
	6–12	7
	12–18	3
	18–24	
	24–30	1
	30–36	
	36–42	1
	42–48	1
Total		16
Mound D	0–6	8
	6–12	10
	12–18	8
	18–24	17
	24–30	5
Total		48
Site totals		960

TABLE 3.—*Occurrence of molluscan, crustacean, and echinoid remains in the test areas*

Test area	Depth in inches	*Argobuccinum oregonense* (Oregon triton)	*Thais* sp. (Dogwinkle)	*Mytilus edulis* (Blue mussel)	*Clinocardium nuttalli* (Basket cockle)	*Protothaca staminea* (Pacific littleneck clam)	*Saxidomus giganteus* (Smooth Washington clam)	*Schizothareus nuttalli* (Pacific gaper clam)	*Balanus* sp. (Barnacle)	*Strongylocentrotus purpuratus* (Sea urchin)	*Acmaea pelta* (Shield limpet)	*Margarites pupillus* (Puppet margarite)
Mound A	0–6	------	------	×	------	×	------	------	------	------	------	------
	6–12	------	------	×	------	×	×	------	------	------	------	------
	12–18	------	------	×	------	×	------	------	------	------	------	------
	18–24	------	------	×	------	------	------	------	------	------	------	------
	24–30	------	------	×	------	------	×	------	------	×	------	------
	30–36	------	------	×	------	------	×	------	------	×	------	------
Mound B	0–6	×	------	×	(a)	×	×	×	------	------	(a)	(a)
	6–12	------	------	×	------	×	×	×	------	×	------	------
	12–18	×	×	×	------	×	×	×	------	×	------	------
	18–24	------	×	×	------	×	×	------	------	------	------	------
	24–30	------	×	×	------	×	×	------	------	------	------	------
	30–36	------	------	×	------	------	×	------	------	------	------	------
Mound C	0–6	------	------	×	×	×	------	------	×	------	------	------
	6–12	------	------	×	------	×	×	------	------	×	------	------
	12–18	------	------	×	------	------	------	------	------	------	------	------
	18–24	------	------	×	------	------	------	------	------	------	------	------
	24–30	------	------	------	------	------	×	------	------	------	------	------
Mound D	0–6	------	------	×	------	(a)	------	------	------	×	------	------
	6–12	------	------	×	------	------	------	------	------	×	------	------
	12–18	------	------	×	------	------	------	------	------	×	------	------
	18–24	------	------	×	------	------	------	------	------	×	------	------
	24–30	------	------	×	------	------	------	------	------	×	------	------

(a) Indicates presence in mound, but not in test area; depth not recorded in this table.

ARTIFACTS

By Frederica de Laguna, Francis A. Riddell, and Donald F. McGeein

INTRODUCTION

In the following sections, the archeological material from the Yakutat area is described and compared with types of artifacts from neighboring regions and tribes in an attempt to show the cultural relationships of the prehistoric inhabitants of Yakutat. Since relatively little information was obtained from sites other than Old Town on Knight Island, our inquiries will chiefly be concerned with the cultural position of that site. Here a total of 987 specimens was obtained, consisting of finished artifacts, unfinished pieces, and worked materials. Of the total, 548 are of stone, 45 of native copper, 3 of native copper and of wood or bone, 19 of drift iron, 78 of cannel coal (or oil shale?), 199 of bone, and 95 of wood, roots, bark, or skin.

On the basis of the distribution of the various types of artifacts, as well as on the character of the middens, we have attempted to determine the relative ages of the different parts of the site at Old Town. Thus, the youngest part of the site, "Old Town III," apparently consists of Mound A, the upper levels of Mound B, House 9, and House Pit 1. An older part of the site, "Old Town II," consists of the lower layers of Mound B, and of House 8 and the Storage House which lies within those layers. Mounds C and D and the fill of House Pit 7 seem to be slightly older and are designated as "Old Town I," although they may represent the same period as the lower part of Mound B.

Some 38 specimens (24 of stone, 8 of bone, 2 of copper, and 4 of coal) came from Mound A or B, from unknown levels within Mound B, or from a test pit between Mounds B and C, and so are of undetermined age.

Table 4 gives the distribution of these artifacts.

Since copper and stone are relatively imperishable, the numbers of artifacts of these materials found in different parts of the site probably represent true samples. Thus, of the stone specimens with known provenience, 53.4 percent came from Old Town III, 19.3 percent from Old Town II, and 27.3 percent from Old Town I. The youngest section, Old Town III, yielded 67.4 percent of the copper; 26.1 percent came from Old Town II; while only 6.5 percent came from Old Town I. Coal can be considered as relatively lasting.

Table 4.—*Specimens from Old Town*

Provenience	Material					
	Stone	Copper	Iron	Coal	Bone	Wood, etc.
Mound A:						
Level unknown	5	---------	1	---------	1	---------
Upper levels	4	1	---------	---------	9	---------
Lower levels	7	---------	---------	---------	1	2
Mound B, upper levels	172	19	1	29	67	7
House 9 (including fill)	22	[a] 3	3	3	---------	19
House Pit 1, fill	72	8	2	35	1	---------
Total, Old Town III	282	31	7	67	79	28
Mound B, lower levels	59	[b] 8	3	5	72	5
Storage House (including fill)	9	[a] 2	[c] 7	---------	20	51
House 8 (including fill)	31	2	2	1	8	10
Total, Old Town II	99	12	[c] 12	6	100	66
Mound C:						
Level unknown	2	---------	---------	---------	---------	---------
Upper levels	41	2	---------	1	---------	---------
Lower levels	24	---------	---------	---------	---------	1
Mound D:						
Upper levels	16	---------	---------	---------	5	---------
Lower levels	9	---------	---------	---------	7	---------
House Pit 7:						
Upper fill	26	1	---------	---------	---------	---------
Lower fill	25	---------	---------	---------	---------	---------
Total, Old Town I	143	3	---------	1	12	1
Total, Old Town I and II	242	15	[c] 12	7	112	67
Total, age uncertain	24	2	---------	4	8	---------
Grand total	548	48	[c] 19	78	199	95

[a] Includes 1 of copper and wood.
[b] Includes 1 of copper and bone.
[c] Possibly 5 scraps represent only 1 artifact.

although we cannot know how much may have been destroyed in fires. It is probably significant that 90.5 percent came from the most recent part of the site, 7.6 percent from Old Town II, and only one specimen from the oldest sections. Iron is probably less durable since it rusts rapidly in such a damp climate, yet 36.3 percent came from Old Town III, 63.7 percent from Old Town II, and none from Old Town I. If five scraps from the Storage House represent only one original specimen, the number of iron pieces is almost evenly divided between Old Town III and II.

The relative scarcity of bone material in both the youngest and the oldest parts of the site, except for the upper levels of Mound B, is probably due to the acidity of the soil everywhere except where there are concentrations of shell. The distribution of bone artifacts found is probably no guide to the numbers actually made and used at different periods. Thus, 41.4 percent of the bone specimens came from Old Town III, 53.4 percent from Old Town II, and only 5.2 percent from Old Town I. The preservation of wood, bark, roots, and other perishable organic materials was due to the accident of carbonization, and can give little indication of the importance of wood and basketry. According to our informants, practically every item of clothing was made of skins; wood or roots were of major importance for household utensils, tools, and weapons.

On the whole, the style and degree of finish of the artifacts does not suggest very careful or skilled workmanship. Most of the stone specimens appear to have been quickly and carelessly made, except for the adz blades of greenstone or other hard rocks, and some of the more carefully shaped lamps. The copper artifacts suggest greater skill, perhaps expended on this material because it was valuable. A large proportion of the bone specimens are simply worked pieces or roughly pointed splinters, but there are also some barbed weapons that exhibit more careful workmanship. The decorated artifacts of stone, bone, or wood fail to show any high development of the traditional Northwest Coast style, probably because they are rather crude. The finds of red paint suggest that some artifacts were painted, but no examples of painting were found. Judging by the scanty remains, wooden boxes and twined baskets were perhaps the best-made objects at Old Town. High development of weaving techniques is also illustrated in the blanket from Knight Island (see pp. 187–192).

For the sake of brevity, detailed descriptions of the artifacts are not given here, although this information was included in the six copies of the original report submitted to the Arctic Institute of North America. Brief designations, such as "Old Town I, II, or III," are here substituted for more specific proveniences, especially since the artifacts recovered from the various house and cache pits have already been listed.

In the descriptions of artifacts, measurements in parentheses indicate that the specimen is broken and the dimensions in question are incomplete.

OBJECTS OF COPPER

The 48 objects from Old Town made wholly or in part of copper include arrowheads, blades for ulos or other knives (see fig. 10), pins, hooks (see fig. 18, *d*, *e*, *i*, *j*), ornaments such as bracelets, rings, beads, and coils of wire (see fig. 19, *a–d*, *g–i*), and nails and scraps. In addition, a broken copper knife blade was found on Little Fort Island (site 9, near Knight Island). This specimen, as well as all those from Old Town, appears to be of native copper, whereas a copper scraper (see fig. 11, *f*) and several other fragments from Diyaguna'ᴇt on Lost River seem to be of commercial sheet copper.

Native copper is said to have been obtained in trade from the Copper River and was considered so valuable that copper ornaments were worn only by the rich and noble. None of our informants had seen a "copper," but several described them from tradition as shield-shaped sheets, rounded or pointed at both ends and constricted in the middle. They were symmetrical, and thus did not conform to the common shape on the Northwest Coast, if our informants are correct. Coppers were as long as the forearm, the whole arm, or the neck and arm together. The natives had also heard of spear heads, knives, and sea otter harpoon arrowheads of copper, and said that their ancestors could make copper "as hard as steel," presumably referring to a process of repeated heating and pounding.

Discovery of native copper and of methods of working it were ascribed by tradition to the Atna of the Copper River. The first copper was supposed to have been brought to Yakutat by the ancestors of the Kʷack̓qwan sib who emigrated from the vicinity of Chitina on the Copper River. Archeological specimens show that copper was worked by simple techniques, such as hammering, cutting or scoring with a chisel, bending, and grinding. Many pieces exhibit a laminated texture, or are flat on one surface and slightly convex or faceted on the other, owing to pounding.

The various types of copper implements and ornaments are described in the appropriate sections below. In addition to these pieces, there are three scraps of copper from Old Town III and one from Old Town II. The distribution of all the copper objects (table 4) suggests that while native copper was relatively scarce during the earliest period of occupation, it became more common in the latest.

OBJECTS OF IRON

Nails and spikes and other scraps of iron, obviously obtained directly from the Whites, were found at Diyaguna'ᴇt and Ness̓udat. At the latter site there were also a straight iron knife blade, probably of commercial manufacture, and an iron musket (?) ball, 2.7 cm. in diameter. Of native manufacture were a large double-edged dagger from Diyaguna'ᴇt (fig. 13, *b*), an ulo-shaped scraper from Ness̓udat, and an arrowhead from Shallow Water Town (site 20 on Little Lost River). These are obviously all copies of articles originally made of native copper.

The more old-fashioned natives at Yakutat still make their own ulos, scrapers, fleshers, and blades for crooked knives of iron, and use files as material from which to shape small adz blades and barbed heads for seal and fish harpoons (fig. 13, *c*). Our informants disagreed as to whether iron nails or spikes had ever been shaped into small barbed harpoon arrowheads for sea otter.

Of greater interest than recent objects made of trade iron, are the 19 pieces of iron found at Old Town (see table 4), for these were almost certainly derived from driftwood or wreckage (pl. 4, except *i*). Our informants reported that iron was known long before the first

Whites appeared and that their ancestors used to look for it along the beaches, since anyone who found a nail in driftwood was considered lucky. Iron is said to have been worked like native copper, by heating it in an open fire, and by pounding and grinding it into spearheads, knives, and daggers (fig. 13, *d*).

Drucker (1950, p. 256) also reports:

> Many natives, particularly in the north, maintained that their people had iron long before Europeans appeared on the scene and for corroboration cite any number of traditions relating how some ancestor found a "log" with iron in it along the beach. (The "log" they interpret as a mast of a wrecked vessel.) This traditional motif of the finding of drift iron, if it be a myth, has a wide distribution on the Northwest Coast, or else the event occurred rather often, for the Tolowa of northwest California claim their ancestors got iron in the same manner. It is difficult to retain one's skepticism in the face of the plausibility and constant reiteration of this story, although what these vessels with timbers so laden with iron could have been is hard to say. Barbeau (1929) has emphasized the significance of Cook's account of the quantity of iron seen at Nootka Sound.

Stories about drift iron told by our informants at Angoon and at Yakutat have none of the character of true myths or even of the tales of sib origins, but seem rather to belong to traditional or legendary history and to recount the exploits of real persons. Moreover, these stories never described drift iron as abundant; a single piece was enough to make the finder rich. The reports of the early explorers, including Steller in 1741, seem to indicate clearly that drift iron was utilized by the Aleut, Pacific Eskimo, and Northwest Coast Indians before there was direct contact with Europeans in the latter part of the 18th century. (See discussion of this evidence in Rickard, 1939, and de Laguna, 1956, pp. 60–64, and sources cited there.)

As was to have been expected, most of the iron at Old Town was recovered in the form of small fragments, so heavily rusted that it was usually difficult to determine the original shapes. The largest piece (pl. 4, *l*), 8.9 by 2.7 by 0.9 cm., was probably the blade for a small adz or chisel. It is thickest in the middle, thinning toward the now damaged ends. The parallel edges seem to have been hammered to lip over slightly. This specimen is from Old Town III. A blade for adz or scraper (pl. 4, *k*), from Old Town II, measures 4.6 by 3.7 by 0.5 cm., and is similar in shape to blades now used in long-handled fleshers to scrape skins. Five small pieces of iron, none now over 4.8 cm. in length or 0.2 cm. in thickness, appear to be fragments of knife blades (pl. 4, *b*, *e*, *h*, *j*). Of these, four are from Old Town II and the fifth from Old Town III. There are also three fragments of what appear to be square-cut nails from Old Town III (pl. 4, *a*, *c*, *f*) and another from Old Town II (pl. 4, *d*). A slender pin from Old Town II (pl. 4, *g*), 6.6 cm. long, pointed at one end and blunt at the other, may have been used as an awl or drill. Lastly, five tiny scraps of what was perhaps a single object, now unrecognizable, were found just above the floor of the Storage House in Old Town II.

The fact that all but the adz blade, the pin, and two fragmentary knife blades were found in house pits (House Pit 1, Houses 8 and 9), and the Storage House, or in a cache pit (Subsurface Pit 32), suggests that iron was too precious to be thrown away in the midden. No iron was found in the oldest part of the site (Mounds C and D and House Pit 7), where three pieces of copper were recovered, and this tends to confirm native tradition that while drift iron was known in precontact times, it was not available as early as copper.

ADZES, AXES, AND SMALL WOODWORKING TOOLS

The Yakutat woodworker is said to have used adzes and axes, chisels, wooden wedges and wooden mauls, drills, straight-bladed drawknives, and crooked knives. Only the wooden wedges and mauls are completely unrepresented in the archeological collections.

SPLITTING ADZES

Three complete and eleven broken splitting adzes were found (pl. 5, *a, b, d, f, g, h*). These are all of greenstone, except for one of hard green schist and another of fine-grained metamorphic rock. Ten specimens are from Old Town III, three (plus two uncertain fragments) from Old Town II, but only one from Old Town I. In addition, a resident of Yakutat has two splitting adz blades that are said to have been found at Diyaguna'ᴇt. This sample, though small, suggests that the splitting adz was gaining in popularity during the period of occupation of Old Town.

This type of adz was intended for heavy work, especially for cutting down trees by splitting out pieces of the trunk, and it was appropriately called "stone wedge" in Tlingit, to distinguish it from the planing adz or "chopper" used to finish planks, to shape canoes, and for other light work. Keithahn (1962, pp. 66 ff., fig. 1, *d, f, g*) distinguishes, on the basis of experiments, three varieties of what I have termed splitting adz: "char adz," "felling adz," and "splitting adz," but there is no evidence that the Tlingit themselves made such distinctions.

Complete specimens range in length from 18 to 30 cm., in height (thickness) from 4 to about 7.8 cm., and in width from 3.2 to 5 cm. They were shaped by pecking and grinding; some seem to have been polished over the entire surface, while others are roughly finished. These blades were obviously intended to be lashed to a T-shaped handle (cf. Niblack, 1890, pl. xiii, figs. 87, 90, 91), since all but the most fragmentary exhibit lashing grooves across the rear half of the head. The only exception is one specimen from Diyaguna'ᴇt which now lacks a groove, but which appears to have been refinished for further use after the original butt was broken. The other blade from Diyaguna'ᴇt and the single specimen from Old Town I have only a single lashing groove, while heads from Old Town II and III have two to four grooves, and often, in addition, two or three knobs or ridges to hold the lashings. The butts of four specimens, representing all parts of the site, have been narrowed by grinding or chipping to form a crest or axlike blade at the butt. Almost every specimen has been damaged at cutting edge or rear end, and some have even been split in two, by hard usage

A number of the broken specimens were reshaped for further use. Thus, two blades (pl. 5, *b*, *d*) found cached under a grinding slab in the fill of House Pit 1 had been freshly sharpened, although the butt end of one was broken off. A fragment (pl. 5, *h*) from Old Town III is chipped and battered along one edge and across the ends as if it had been partially reshaped as a planing adz blade. A broken off fore-end (pl. 5, *g*) from Old Town III had been used as a hammer, or possibly as a wedge. A similar fragment, found in Subsurface Pit 14 in Old Town II, may also have been reworked. In addition, two pieces of greenstone from Old Town II may have been fragments of splitting adzes. One has been reground as if for a planing adz, but is unfinished; the other has been partially shaped as a miniature ax.

The signs of re-use on these specimens suggest that the owners were loath to discard even the fragments of splitting adzes. This accords with the statement made by an informant that the owner would feel so badly if one were broken that he might kill a slave! Adzes were traditionally made of greenstone imported from Icy Bay. This rock, like the fine-grained shale or siltstone used for whetstones, had to be taken by stealth, "stolen from the glacier," or else a gift was left in order to ward off a dangerous storm. Furthermore, magical restrictions were observed to prevent the adz from breaking. Thus, men should start to chop in the early dawn before the raven calls, and their wives should not eat until the men had finished their work. These were precautions observed for all dangerous or supernaturally risky undertakings.

The Yakutat splitting adzes probably represent what Drucker (1943, p. 45) has termed type III (with narrow axlike butt) and type VI (long, slender, with rectangular cross section and grooves near the butt end). Our specimens are, however, characterized especially by the various combinations of ridges and grooves to hold the lashings. Although similar arrangements are occasionally encountered on the Northwest Coast (Niblack, 1890, pl. xx, fig. 79, *d;* de Laguna, 1960, pl. 5, *a*, *b*), most adzes from this area have only a single groove, as on the specimen from Old Town I and the other from Diyaguna'ᴇt. (However, cf. Keithahn, 1962, fig. 1, *d*, *f*, *g*.) Chugach adzes are similar in style to those of Yakutat, for they include many with several grooves, knobs, or ridges for lashing. There are also several with narrowed butts, and a number of grooveless specimens like the one from Diyaguna'ᴇt (de Laguna, 1956, pp. 111–117). Blades with one or two grooves and with one to three ridges, as well as some large grooveless forms (large planing adz blades?), are also known from Kodiak (Hrdlička, 1944, pp. 333, 343, fig. 113; Heizer, 1956, p. 44). In general, Pacific Eskimo splitting adzes have the hafting groove or grooves placed near the center of the blade, and this is also true of the Tena specimens from the Yukon (de Laguna, 1947, pl. x). The blades from Yakutat and most of those from the Northwest Coast, including those from Angoon (de Laguna, 1960, pl. 5, *a*, *b*), have the grooves nearer to the butt. This is also the style of specimens from southwestern Yukon Territory (Southern Tutchone?) (MacNeish, 1960, pl. ᴠɪ, figs. 1–3). Drucker (1943, p. 120) has commented on the poor finish on Tlingit specimens, an observation which would apply equally well to Chugach blades and to most of those from Yakutat.

On the Northwest Coast, the splitting adz seems to be virtually confined to the Tlingit, Tsimshian, and Haida, despite two specimens from the Bella Coola and two fragments from northern Kwakiutl territory (Drucker, 1943, p. 120). It was not reported ethnologically south of the northernmost Kwakiutl, although Drucker (1950, Trait 419, p. 255) feels that "its southern limit is not certain." In southwestern Alaska it appeared first in the early prehistoric period in Prince William Sound, but evidently became more numerous in later times. It was not found until late Kachemak Bay III on Cook Inlet and is probably restricted to the late upper (Koniag) levels on Kodiak, and was never adopted by the Aleut. While not uncommon in the Tanana and Yukon valleys, it occurs only sporadically among the Eskimo north of the Alaska Peninsula (de Laguna, 1947, p. 154; 1956, pp. 263 ff.; Heizer, 1956, p. 44). Birket-Smith (1953, p. 220) cautiously concurs in the opinion that the grooved splitting adz is a relatively late specialization from a heavy but ungrooved planing adz, a development which probably took place on the northern Northwest Coast.

AXES

There are two stone ax blades (pl. 5, *e*, *i*), grooved like splitting adz blades, but with the cutting edge in a plane parallel to the handle. One was found in Old Town III, the other just above the floor of the Storage House in Old Town II. The first appears to have been reshaped from another implement, possibly a splitting adz, and has a single broad groove. The cutting edge is broken, and the specimen was originally about 19 cm. long, 5.5 cm. high, and 4.5 cm. wide. The second specimen has two hafting grooves, is 16.4 cm. long, 5.5 cm. high, and 2.8 cm. thick, and was probably made from an asymmetric planing adz blade.

In addition, a celt (pl. 6, *i*) from the fill of House Pit 1, Old Town III, was probably a planing adz blade, although the asymmetric shape of the butt suggests that it may have been hafted like an ax. There is a similar uncertainty about the blade of a small woodworking tool (pl. 7, *i*) from the fill of House 9 in Old Town III.

Grooved ax blades are very rare and are known only from the Copper River Eyak, the Chugachs, and the Koniag, with a possible Tlingit exception (Keithahn, 1962, p. 69). The specimens seem to be unusual variants of the splitting adz, appearing sometimes as double-bitted implements such as an "adz-ax" or an "ax-pick." They are few in number and not known before the early prehistoric period in Prince William Sound and the upper (Koniag) levels on Kodiak. Crude ungrooved stone ax blades, lashed to the side of the handle, have been reported from the Eyak, the Ingalik Tena, and the northern Eskimo (for chopping frozen meat) (Birket-Smith and de Laguna, 1938, pp. 73 f.; de Laguna, 1947, pp. 117, 162; 1956, p. 121; Heizer, 1956, p. 44). The ax blades of the Ingalik have one rounded corner (Osgood, 1940, pp. 96–98), a feature noticed on one small woodworking tool from Yakutat, probably hafted as an ax blade.

PLANING ADZES

There are 13 planing adz blades (pl. 6). These are ungrooved stone celts that are wider than they are thick, in contrast to the splitting adz blades that are thicker (higher) than they are wide. One surface is more convex than the other, and they were evidently hafted by lashing the flatter side against an (inverted) L-shaped handle, like modern steel planing adz blades from Yakutat (cf. Niblack, 1890, pl. xx, fig. 79, *g;* pl. XXIII, fig. 94). The archeological specimens are made of greenstone or hard, fine-grained rock, and show various degrees of finish. Some are made of a naturally shaped stone, or a section (boulder chip) broken from a cobble, with only a sharpened edge; others have been neatly shaped by pecking, flaking, and probably by sawing, although none is polished at the butt. They are roughly rectangular in outline, usually narrowing at the butt, although two specimens from Old Town II and one from Old Town I are narrower at the cutting edge. An iron blade (pl. 4, *l*) from Old Town III, probably for a planing adz, has already been described (p. 83).

The planing adz blades fall into two groups on the basis of size. The five larger (pl. 6, *a*, *c*, *d*, *f*, *i*) are about 9 to 16 cm. long, 5.6 to 8 cm. wide, and about 1.7 to 2.3 cm. thick. One of these (pl. 6, *i*) is narrowed at the butt on one edge as if it might have been hafted like an ax. A sixth blade (pl. 6, *g*) is 17.4 cm. long, but as narrow as the smaller specimens, measuring only 3.2 cm. in width, and may have been intended for a chisel.

There are seven smaller blades (pl. 6, *b*, *e*), some of which may be fragmentary or unfinished, and which may have been used for scrapers rather than for adzes. They range in length from about 6 to 8.3 cm., in width from 3.2 to 5.1 cm., and in thickness from 0.6 to 2 cm.

The provenience of these blades is: one large from Diyaguna'ᴇt; three large from Old Town III, including the long slender specimen; two large and one small from Old Town II; six small from Old Town I.

In addition, there are seven large specimens that appear to be unfinished (pl. 6, *h*, *j*). They range in length from 11.6 to 17.6 cm., and several are probably reshaped fragments of splitting adzes. One is from Old Town III, one from Old Town II, and five from Old Town I.

There is little to distinguish the Yakutat planing adz blades from those of the Eskimo and the Indians of the Northwest Coast and the interior. They correspond to types described by Drucker (1943, pp. 46 f., 121), although he does not recognize as a special form those that taper toward the cutting edge.

Of more interest than the form of the planing adz blade is the relative frequency of this type as compared to the splitting adz. Although our samples are small, they suggest that the planing adz lost in popularity at Old Town as the splitting adz became more common. The same trend is more clearly apparent on Prince William Sound, while at the early historic Tlingit site of Daxatkanada in the Angoon area, the planing adz is poorly represented in comparison to the splitting adz (de Laguna, 1956, p. 118; 1960, pp. 99–101).

There is no evidence that the Yakutat people used bone or antler heads for hafting the smaller adz blades, and such heads are not encountered in archeological or ethnological collections from the Northwest Coast until one reaches Coast Salish territory (Drucker, 1943, pp. 122, 124; de Laguna, 1947, pp. 157–159; King, 1950, pp. 49, 58). Bone or antler adz heads are known from Kachemak Bay III, Kodiak Island (upper and lower levels), Port Moller on the Alaska Peninsula, but not from Prince William Sound (de Laguna, 1956, p. 117; Heizer, 1956, pp. 73 f.). In general, such hafting devices are much rarer in southwestern Alaska than among the Eskimo farther north, who seldom attach adz blades directly to the handle, although this was commonly done by the Pacific Eskimo, expecially in hafting larger blades. While I have suggested (de Laguna, 1947, p. 159) a relationship between the archeological adz hafts from Comox, Marpole (Eburne), and Cattle Point in Coast Salish territory (and the ethnological specimens of the Coast Salish) and one type of haft of the Old Bering Sea Eskimo, any connecting links between these must antedate known material from the intervening areas. On the other hand, documented methods of hafting planing adz blades are shared by the Chugach, Yakutat, northern and central Northwest Coast groups.

ADZ FRAGMENTS

There are finally 13 small pieces of worked greenstone, green chert, green schist, and other hard rocks, that are apparently fragments from the polished surfaces of adzes, although the pieces are too small for classification. Of these, four are from Old Town III, eight from Old Town II, and one from Old Town, provenience unknown.

SMALL WOODWORKING TOOLS

In addition to the larger adz blades, there are 76 small artifacts, chiefly of slate and schist, the majority of which evidently served as tools for working wood, bone, and possibly copper. While a few specimens of greenstone or hard metamorphic rock are well made, the greater number, of softer shales and slates, are carelessly shaped, being little more than pebbles or flakes with a sharpened end. Lack of concern in the selection of material and in workmanship suggests that these tools were expendable. Perhaps the majority were made only for some particular task, after which they were discarded. Since many are broken and some are evidently unfinished, identification of function is difficult.

Nineteen specimens are shaped like miniature splitting adz blades (pl. 7, *f–h*, *j–o*), from 7.6 to 13.7 cm. long. The average are about 9 to 10 cm. in length, 3 cm. high, and 1.2 cm. thick. These tools were presumably hafted like small adzes. There is one specimen with two grooves (pl. 7, *j*), and five with a single groove for lashing (pl. 7, *f*, *g*, *k*, *m*). Although the remaining specimens are grooveless (pl. 7, *l*, *n*, *o*), most have irregularities on the top edge that could have held lashings, and on one (pl. 7, *h*) the marks of cords can be seen. Sixteen of these tools came from Old Town III, and three from Old Town II.

In addition, there is an ungrooved specimen (pl. 7, *i*) from Old Town III which is almost square in cross section, and which might have been hafted like a miniature ax, to judge by the wear on the corner of the bit. There also appears to be an unfinished tool of the same kind from Old Town III.

Twenty-four complete or fragmentary blades are shaped like the miniature splitting adzes except that they are usually smaller in all dimensions (pl. 8, *h–p*); in particular, they are much thinner, being only 0.3 to 0.8 cm. thick. Some may have been hafted like adzes; others probably served as burins or as gouges. They range in proportion from slender tools resembling drills, to wide leaf-shaped or triangular pieces of slate and schist. Since most are unfinished except for grinding at the edges near the point or bit, it is difficult to tell whether the irregularities on the edges were intended to hold lashings. Only one specimen (pl. 8, *n*) has a clearly shaped groove, although seven others were probably attached to handles. Seventeen "burin-chisel" tools of this kind are from Old Town III, six from Old Town II, and one fragment from Old Town II or III.

Still smaller, are nine thin scraps or splinters of schist or slate, on which the edges near the point have been ground flat to meet at a sharp angle that was apparently used as a burin (pl. 8, *e*, *g*). On one specimen (pl. 8, *f*) the opposite end has been ground on both surfaces to produce a faceted point like that on a sharp knife. These tiny implements are about 5 cm. long and 1 to 2 cm. wide. Two are from Old Town III, two and a fragment from Old Town II, and four fragments from Old Town I. Identification of the broken specimens is very uncertain.

Four or five implements are shaped like tiny planing adz blades (pl. 7, *a–e*) and may have been hafted for use as small adzes or as chisels. They are about 6 to 9.5 cm. long, and about 2 cm. wide. Only their smaller size distinguishes them from the little specimens already described under planing adz blades (p. 94). One complete and two broken specimens are from Old Town III, and two from Old Town I.

In addition, there are five much narrower and thinner tools (pl. 8, *a*, *b*), shaped like tiny chisels, which could have been used as knives or even as drill points, since they are about 1 cm. wide and only 0.3 to 0.8 cm. thick. Two are from Old Town III, one from Old Town II, one from Old Town I, and one from Old Town II or III.

One of our informants suggested that some of the implements may have been drills (pl. 8, *c*, *d*). This identification would best fit two specimens from Old Town III and one from Old Town II that have oval or rectangular sections, not over 1.3 cm. wide. Two broken and three unfinished specimens, of which one is from Dolgoi Island, three are from Old Town III, and one is from Old Town I, may perhaps be classed here also.

Of uncertain function are four thin leaf-shaped slate flakes that are ground flat and dull along the edges, although these meet to form a sharp point. They may be unfinished (?) arrowheads, or were perhaps very thin burinlike blades for small knives. They are about 5 to 6 cm. long, 1.2 to 1.9 cm. wide, and 0.3 to 0.4 cm. thick. One (fig. 14, *a*) was found with basketry fragments (pl. 18, *a*) just above the floor of the Storage House in Old Town II. Another is from Old Town III, and two are from Old Town I.

These small implements came preponderantly from the youngest portions of the site. Excluding the 4 leaf-shaped flakes and 3 other specimens of uncertain provenience, 45 of the remaining 69 implements, or 65.3 percent, come from Old Town III, a section which yielded 53.4 percent of the total number of stone artifacts of known proveniences.

While some of the adzlike tools with grooves or constrictions were undoubtedly hafted to L-shaped handles and used for chopping, many of the more delicate specimens were probably held in the hand to serve as burins for cutting grooves in bone and wood. In fact, several pieces of bone appear to have been cut with such tools. Other specimens may have been hafted in short wooden handles and used as chisels, and the battered butts on a few others suggest that they had served as chisels without hafts. Drucker (1943, pp. 46 ff.) includes both hafted and unhafted chisels under the designation of "celts." A hafted chisel with a celt for a blade is illustrated by Niblack (1890, fig. 78) with no other provenience than the Northwest Coast. Two "primitive Tlingit stone knives, with horn handles . . . [and] blades of jade" (Niblack, 1890, fig. 98, *a*, *b*, p. 280), apparently for whittling and splitting, suggest another form that some of our specimens may have taken. One informant identified some of the tools as "chisels," or in Tlingit as "something with which to patch," implying that they were used to cut pieces of wood that were intended to fit snugly, and he pointed out that one specimen was broken as if it had been struck on the butt with a wooden hammer. He also said that these implements might have been used to cut copper, a suggestion which is supported by the appearance of some of the copper artifacts. Another informant suggested that these tools were for gouging holes. We may surmise that they were used for many kinds of delicate and exact carving.

The closest parallels to these Yakutat tools are undoubtedly the stone chisellike implements from Prince William Sound. Some of the latter are like miniature splitting adzes, occasionally grooved; others are like tiny planing adzes with knifelike blades. There is also a larger stone chisel with battered butt, and several small blades of slate and schist for adzes or scrapers. All of these tools seem to appear only in late prehistoric Chugach sites (de Laguna, 1956, pp. 118, 121 f.). Somewhat similar adzlike scraper(?) blades are known from all periods on Kachemak Bay. They also occur on Kodiak, as do small blades for chisels or planing adzes (Hrdlička, 1944, pl. 69, pp. 333, 343; Heizer, 1956, pl. 47, *l*, *y*, *z*, *a′*; pl. 31, *k*, *l*, *n*, *o*). Ten Tena chisels, although crude (de Laguna, 1947, pl. XI, *8*, *9*), may be related to the Eskimo and Yakutat specimens.

The relatively late development or late popularity of these small tools in Prince William Sound and at Yakutat is paralleled by the growth in importance of the splitting adz in these areas, and suggests the development of skilled woodworking. As less exclusive reliance came to be placed on the ordinary large planing adz blade, a generalized tool, there came to be increased use of the more specialized splitting adz and of the various forms of small adzes, chisels, and implements like burins. Presumably greater skills were developed as heavy and delicate tasks became differentiated.

It is uncertain whether we have any close parallels to these small tools on the Northwest Coast south of Yakutat, except for the specimens cited in Niblack, and the celtlike chisel blades of the Nootka, Salish, and Quileut (de Laguna, 1947, p. 168; Barnett, 1939, Traits 583 and 585). While Drucker (1950, Trait 414) records stone chisels from the coastal Tsimshian, Bella Coola, Kwakiutl, and Nootka, his Haida and Tlingit informants denied their use. This is in striking contrast to the ethnological information obtained at Yakutat.

Keithahn (1962, p. 68) mentions occasional finds in southeastern Alaska of very small blades of greenstone and other hard rocks, which he calls "micro bits" for adzes. A typical example from Mole Harbor on Admiralty Island is only 3.8 cm. long. These may well correspond to some of the small woodworking tools from Yakutat.

Further comparisons of such small tools, as well as of chisels and adz blades, must await the publication in full of Borden's material from the Fraser River area. Here, small chisels and wedges are present through the series of sites on the delta. Nephrite adz blades, neatly sawed out and finished, are common at Beach Grove, an undated site which may be as old as or older than the famous site of Marpole (Eburne). They are abundant at the latter site, but rare at Locarno Beach I. They again become common at Whalen Farm II, and at historic Stselax. At Whalen I, adz blades of California mussel shell were used. Radiocarbon dates from most of these sites take us back with assurance to the middle of the first millennium B.C., and perhaps further. Marpole (Eburne) has dates ranging from 943 B.C. ±170 years up to A.D. 179 ±60 years (Borden, personal communication). Unfortunately, we do not know how these dates may be related to the material excavated at this site at various times, and we have no dates from Cattle Point on San Juan Island.

RUBBING TOOLS

In addition to the small tools used for cutting, there are three from Old Town III which were apparently used for rubbing (pl. 10, *a*, *b*). These are amorphous pebbles of limestone, slate, and greenstone, 6.4 to 11.6 cm. long, rubbed at the ends as if they had been used for polishing grooves or carved surfaces.

These three specimens are not unlike the numerous rubbing tools from the early historic Tlingit site of Daxatkanada near Angoon (de Laguna, 1960, pp. 106–108, pl. 7, *a–o*). The latter exhibit a range of shapes comparable to those of the Yakutat cutting tools, although they were evidently used more for rubbing or grinding than for gouging, chopping, or cutting. Most are rubbed flat on one side, a feature absent from the Yakutat rubbing tools. Eight "polishing tools" of hard rock, from Uyak Bay, Kodiak, appear to be somewhat similar (Heizer, 1956, p. 47, pl. 35, *t*, *u*).

BONE BURINS AND CHISELS

Bone also seems to have been used to make woodworking tools. Thus, we have four pieces of heavy bone (mammal leg bone?) shaped like burins for gouging grooves (pl. 16, *d*, *e*, *f*). Three are from Old Town III, and one from an unknown level in Mound B. In addition, there is a smaller, more slender bone tool (pl. 16, *l*), unfortunately broken, from Old Town II. These are very similar to some of the small slate tools described above.

Another broken bone implement from Old Town III and two from Old Town II may have been used as chisels.

KNIVES, SCRAPERS, AND CHOPPERS

The natives at Yakutat distinguish between several kinds of knives and scrapers. These include the ulo, a similar but smaller knife or scraper with cupped blade, a straight-edged man's knife, a crooked knife for carving, a large dagger, a two-handed beaming tool (now an ordinary butcher's knife with the point wrapped in cloth to make a second grip), and a long-handled flesher. All these are now made of iron or steel, or have iron blades, except for some beaming tools of deer leg bone with sharpened edge. Presumably the bones of some other animal were used before the U.S. Fish and Wildlife Service imported deer from southeastern Alaska.

ULOS

Ulos are still used by the older Yakutat women for flensing seals, and, with dulled blades, as scrapers for cleaning sealskins. A typical modern example had an iron blade 12.8 cm. long and something over

3.5 cm. wide. The wooden handle was 14 cm. by 8.5 cm., with rounded back and straight grooved edge into which the blade was set. There was a crescentic hole in the handle to accommodate the index and middle fingers. Our informants claimed that such handles with holes were not used in southeastern Alaska, but were peculiar to Yakutat, where the ordinary oval or plain unperforated handle was also used. Although the true ulo with flat blade is still called by its Eyak name, and the smaller knife or scraper with slightly cupped blade is called in Tlingit "mussel shell," after the material of which it was formerly made, it is sometimes almost impossible to distinguish between these two implements when dealing with metal specimens. Grinnell (1901, p. 161) describes and illustrates how the Yakutat women use the ulo on sealskins.

At Old Town two complete ulos with copper blades and plain wooden handles were found. The first (fig. 10, *e*), from Old Town III, has a narrow handle, 22.5 cm. long, straight along the back, but widening in the middle to 3 cm. Fragments of copper blade can still be seen in the groove along the curved edge. The illustration shows the appearance of the knife as reconstructed.

The second specimen (fig. 10, *a*) was found in the Storage House in Old Town II. The handle, 8.5 cm. long and 2 cm. wide, has a slight depression on the back and on one side, probably to accommodate the fingers. The curved copper blade is only 7.5 cm. long and just over 2 cm. wide in the middle. There are also three complete (fig. 10, *b*; pl. 14, *m*) and four broken blades (pl. 14, *k*, *l*) for ulos or ulo-shaped scrapers. Of these, two complete and three fragmentary blades are from Old Town III, a complete and a broken blade from Old Town II, and one broken specimen from Little Fort Island near Knight Island. These blades are all rather narrow (1.1 to 1.9 cm. wide) and also very thin (0.1 to 0.2 cm. thick), with the thinnest part at the back which was set into the grooved handle. Three complete blades are 15.6, 12.2, and 8 cm. long, the first two crescentic in outline, while the third is almost straight and appears to be unfinished. One of the broken blades (pl. 14, *k*) was probably about 10 cm. long when complete. Identification of the other three broken specimens as ulo blades is uncertain, since they may have been used for small knives of other types, possibly crooked knives.

A somewhat similar fragment of an iron blade (pl. 4, *e*), 1.8 cm. wide and (4.8) cm. long, is from the floor of the Storage House. Six other fragments of iron from Old Town III (pl. 4, *a*, *c*, *f*, *h*,) and four from Old Town II (pl. 4, *d*, *j*) appear to be derived from nails or spikes. Possibly some were used as knife blades, although they are now too corroded to permit identification.

The ulo is an ancient and widely distributed type of knife in both the

New and Old Worlds (Birket-Smith, 1953, p. 187; de Laguna, 1947, p. 182). However, ulo blades of ground slate date back to Kachemak Bay I (for which Rainey and Ralph, 1959, p. 371, have assigned a radiocarbon date of 748 B.C. ±118 years, based on a single sample), to Okvik-Old Bering Sea (dated by Giddings, 1960, p. 124, as 300 B.C. and earlier), to Norton, 500 B.C. to A.D. 400 (Giddings, 1960, p. 125), and to Choris, 1500 to 500 B.C. (Giddings, 1960, p. 127). Except for Okvik and Old Bering Sea, none of these early Eskimo cultures in Alaska has a well-developed ground slate industry; ground slate ulo blades are lacking in the Dorset, "Paleo-Aleut," and Ipiutak. In these, and in a number of earlier cultures, chipped blades presumably take the place of the ground slate ulo. Slate ulo blades (Drucker's types I to III, 1943, pp. 51 f., 123 f.; 1950, Trait 108, "stone fish cutting knives"; Barnett, 1939, Trait 349) are of wide distribution on the Northwest Coast, although they are not common except in the Coast Salish area. At both Angoon (de Laguna, 1960, pp. 109 f.) and Yakutat sites, ground slate ulo blades were represented only by doubtful fragments, in striking contrast to the quantities from the Pacific Eskimo and Fraser River regions. Moreover, in both these areas the slate ulo appears in sites of the greatest age. This is particularly true at Locarno Beach I, on the Fraser Delta, for which a radiocarbon age of 476 B.C. ± 160 years is given. The related Whalen I site has yielded a slightly older date, and for Marpole (Eburne) dates from 943 B.C. to A.D. 179 are claimed (Borden, 1950, pp. 14 ff., 20; 1962). Too little is still known about the oldest periods of Pacific Eskimo culture to prove or disprove Borden's (1962) thesis that ground slate was diffused to the Eskimo from southern British Columbia. Byers (1962) has discussed the great age of slate ulos in the Northeast.

In any case, on the central and northern Northwest Coast the slate ulo was not as popular as knives of other materials, chiefly shell, but we need clearer archeological evidence on this point. Modern ulos with metal blades are illustrated from the Tlingit and Haida by Niblack (1890, pl. xxiv, figs. 95, 96).

Nowhere on the Northwest Coast except at Yakutat and among the Chilkat was native copper abundant enough to have been the preferred material for ulos. Blades like those from Old Town are also known from Kachemak Bay IV (de Laguna, 1934, pl. 49, *14*, *15*). A small copper blade for a man's knife like an ulo was found in a late prehistoric horizon on Prince William Sound (de Laguna, 1956, pl. 27, *3*), and the Chugach may also have had copper ulos, since the 18th-century explorers frequently mentioned their copper knives, weapons, and ornaments. Although Drucker (1950, Trait 108a, pp. 240 f.) reported the "copper fish knife" from the Chilkat Tlingit, he was doubtful of his informants' accuracy. The latters' testimony is, how-

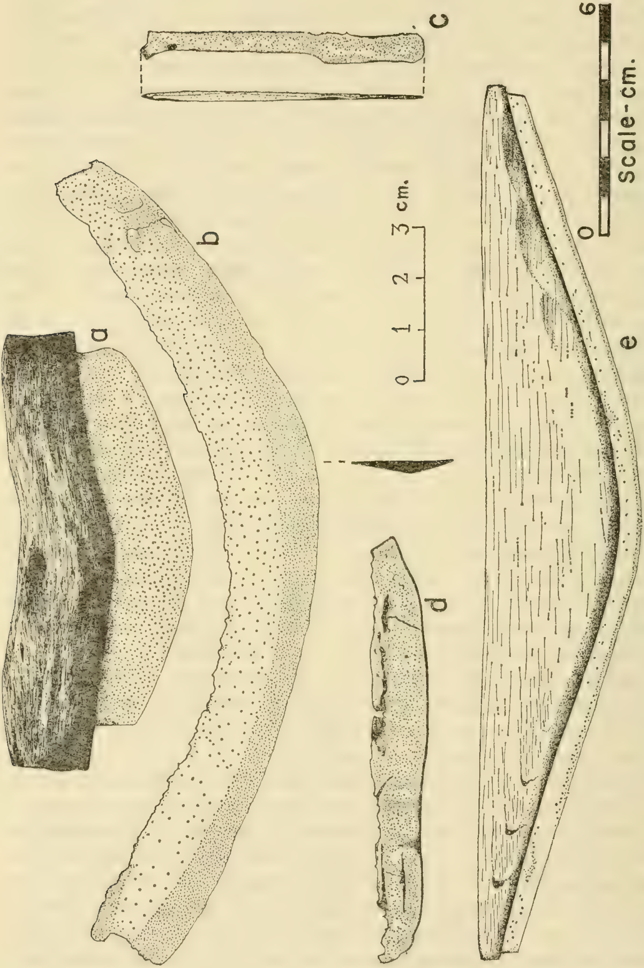
a
b
c
d
e
0 1 2 3 cm.
0 6 Scale-cm.

FIGURE 10
(For legend, see opposite page.)

ever, supported by the Yakutat and Kachemak Bay specimens. Copper River Atna informants (1954) also reported copper "fish knives."

Although the two ulo handles from Old Town were plain, there is no reason to doubt that the type with fingerhole, common at Yakutat today, was also used in the past. Chugach ulos were identical with those of Yakutat (Birket-Smith, 1953, p. 75), and Copper River Eyak ulos were described as like those of the Chugach (Birket-Smith and de Laguna, 1938, p. 74), so presumably also had the hole. The Yukon Tena used both the plain and pierced types (de Laguna, 1947, p. 126). The ulo handle with fingerhole is one of the characteristic Eskimo forms, even though some of the Coast Salish ulos had a hole for the thumb or finger cut through the slate blade below the handle (Barnett, 1939, Trait 351, p. 281).

ULO WITH LATERAL HANDLE

A small semilunar knife of copper (pl. 14, *h*) has a tang at the side, and comes from Old Town I. The blade is now (4.2) cm. long and (3.5) cm. wide, but was probably once larger. The tang has been wrapped with grass, probably to make it fit into a handle. A hair, as yet unidentified, was found adhering to the blade.

The small knife is like some of the larger ulos with lateral handle known from the Bristol Bay-Yukon Eskimo (de Laguna, 1947, p. 186). A single slate blade may represent this form on Kodiak (Heizer, 1956, pl. 40, *a*).

ULO-SHAPED BARK SCRAPER OR KNIFE

A knife or scraper shaped like an ulo with rounded edge was found at Diyaguna'ᴇt (fig. 11, *f*). It is of commercial (?) sheet copper. It is 10.5 cm. long and 4.5 cm. wide, and is unhafted, although a grip has been formed by folding over the metal along the back. This was identified by our informants as a type of knife or scraper called "mussel shell," used especially for shaving off the sweet inner bark of the hemlock. The blade was cupped so that it would scoop, not cut. The same implement was also said to be used to split spruce roots for baskets and to scrape skins. Formerly such a knife was made of the shell of the large California mussel. Modern specimens are made of

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Figure 10.—Copper knives. Drawn by Donald F. McGeein. *a*, Ulo with wooden handle and copper blade, from between floor and wall of Storage House, Old Town II (No. 193); *b*, blade for ulo, from Mound B, upper levels, Old Town III (No. 584); *c*, small knife blade, from Mound B, upper levels, Old Town III (No. 606); *d*, small knife blade, from Surface Pit 6, Mound B, upper levels, Old Town III (No. 84); *e*, ulo with wooden handle and copper blade, from Mound B, upper levels, Old Town III (No. 273), restored.

cupped, semilunar pieces of iron, with or without a wooden handle. An iron blade of this kind was found at Nesśudat.

This small shell knife or scraper, later (?) copied in metal, seems to have been more important on the northern and central Northwest Coast than the ordinary ulo with larger, flat blade. Thus, mussel-shell knives for cutting meat and fish are recorded ethnologically from the Tlingit, and were found archeologically at Daxatkanada (de Laguna, 1960, p. 110, pl. 9, *n*). They are known from the Haida, Tsimshian, Kwakiutl, Bella Coola, Nootka, and Coast Salish (Drucker, 1950, Traits 106, 176; Barnett, 1939, Traits 266, 248, 348). The mussel-shell scraper for bark and skins is known from the Tlingit, Haida, Tsimshian, and Kwakiutl (Drucker, 1950, Traits 262 and 778). The Coast Salish used it for skins but preferred clamshells for bark, and also used shell scrapers for fibers (Barnett, 1939, Traits 274, 543, and 762). Mussel-shell knives and scrapers appear at some sites in Coast Salish territory: Cattle Point (especially the Maritime Phase), Locarno Beach I, and especially at Whalen Farm I (King, 1950, p. 59; Borden, 1950, pp. 15, 20, 24).

The Copper River Eyak used clamshells as knives and as scrapers for dehairing skins (Birket-Smith and de Laguna, 1938, pp. 75, 90). The Chugach used mussel shells for dehairing hides and clamshells for scraping bark (Birket-Smith, 1953, fig. 17, *c*, pp. 74 f.). The Chugach, Eyak, and Yakutat presumably share in the use of these shell implements because of their close contacts with the Northwest Coast Indians. If we can trust the implications of Tlingit linguistic usage which applies the word "mussel shell" to true ulos as well as to similarly shaped knives and scrapers, regardless of their material, these tools must have been made of shell for a long time. The scrapers are particularly associated with securing the sweet edible inner bark of the hemlock and spruce, and it is interesting that of the groups on the Northwest Coast and southwestern Alaska who had access to such bark, the Nootka are almost unique in making no use of it for food.

CROOKED KNIVES (?)

It is reasonable to suppose that some of the broken copper and iron knife blades from Old Town II and III were for crooked knives, since this type of carving knife has been recently very popular at Yakutat, as well as among other Northwest Coast peoples, the Alaskan Eskimo, and interior Indians. For example, the Chugach reported that they formerly made a crooked knife with copper blade. While the true crooked knife required a curved blade of metal, it probably developed from a prototype made with a stone blade set at or near the end of a long curved handle. A type of crooked knife was also made from a curved tooth (de Laguna, 1947, pp. 179 f.; Birket-Smith, 1953, pp. 186 f., 221).

We also found 11 beaver incisors that had been used as chisels or knives for fine woodwork or as blades for engraving tools (pl. 16, *a*, *b*). Four of these are from Old Town III, five from Old Town II, and two from deposits of unknown age. In addition, a similar implement of marmot or porcupine tooth comes from Old Town II (pl. 16, *c*), while a bone tool from Old Town III (pl. 16, *g*) is similarly shaped. Such knives or engraving tools made of the teeth of beaver and other rodents appear sporadically among the Eskimo, being known from the Ipiutak of Point Hope, Nukleet I at Denbigh on Norton Sound, and from Kodiak and Prince William Sound (Heizer, 1956, p. 82; de Laguna, 1947, p. 180; 1956, p. 192; Giddings, 1960, p. 125). Tlingit examples were found at the historic site of Daxatkanada (de Laguna, 1960, p. 118, pl. 9, *o–q*), and the tool is reported ethnologically from the Eyak, Tsimshian, Kwakiutl, and some Coast Salish tribes (Birket-Smith and de Laguna, 1938, p. 74; Drucker, 1950, Trait 432; Barnett, 1939, Trait 614). They also appear at such southern British Columbia sites as Whalen Farm II, Comox, Cattle Point (Maritime Phase), and Marpole (Eburne) (Borden, 1950, p. 20; 1962; King, 1950, pp. 51, 58). Beaver-tooth tools are, however, much more extensively used by the Indians of the northwest interior than on the coast.

STONE SCRAPERS

Six flat ovoid boulder chips, or flakes struck from hard beach cobbles, were apparently used as knives or scrapers or choppers. Use retouch can be seen along the sharp edge of some flakes (pl. 9, *e*, *g*), and two have been thinned by percussion flaking along one edge (pl. 9, *d*, *f*). One of these was identified by an elderly woman as a skin scraper. These boulder chips range from about 8 to 15.5 cm. in length, 8.5 to 13 cm. in width, and 1.5 to 4.3 cm. in thickness. Two specimens are from Old Town III, one from Old Town II, and three from Old Town I.

There are five paddle-shaped scrapers of flaked slate or schist (fig. 11, *e*, *i*, *j*). They apparently have or had a rounded working edge and a wide tang, somewhat constricted laterally as if for hafting. Somewhat similar blades of iron are now fastened to handles from 3 to 4 feet long for use as fleshers in cleaning and softening sealskins while they are being stretched and dried in a frame. The iron blade from Old Town II (pl. 4, *k*) may have been for a scraper of this kind. The stone specimens are 5.8 to 8.5 cm. long, and 3.6 to 6.4 cm. wide at or near the working edge. Three are from Old Town III, and one each from Old Town II and I. There is also an oval end scraper blade of slaty schist from Old Town III which could have been used as a flesher.

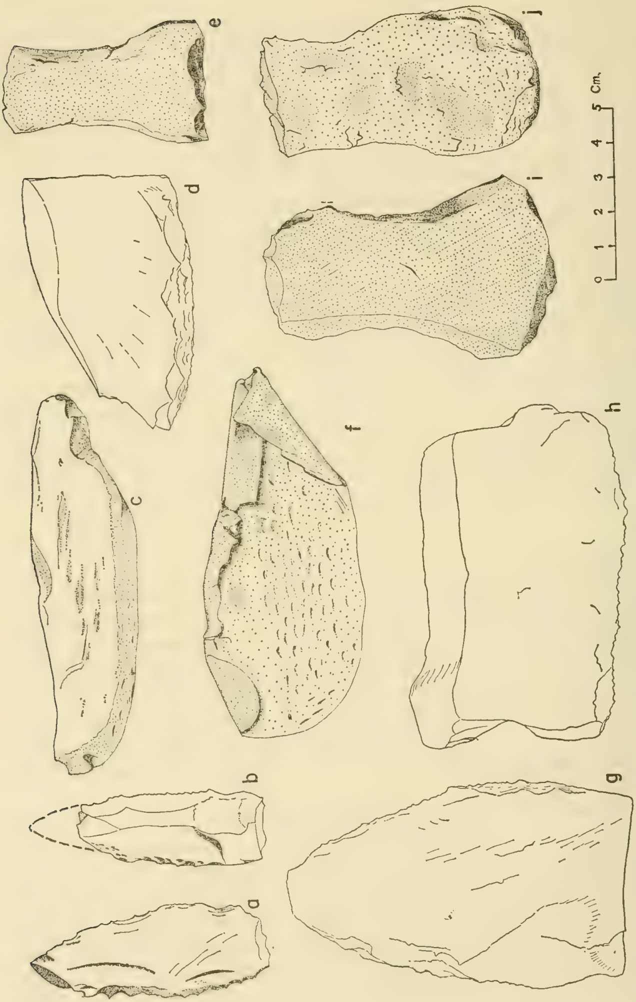
a
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FIGURE 11
(For legend, see opposite page.)

Five stone blades could have been used for ulos or for ulo-shaped scrapers. The only example of a ground slate blade of this kind is a fragment from the lower part of the midden at Diyaguna'ᴇt. A greenstone blade from Old Town III (pl. 9, *c*), 11.6 by 7.4 cm., is well worn along the curved edge and on the surfaces as if it had been used to soften skins. Two specimens of green slate with chipped edges (pl. 9, *a*) are obviously unfinished. They are about 18 cm. long and 9.7 cm. wide, and come from Old Town II and I. An oval scraper from Old Town II, measures 13.2 by 6.4 cm. A partially worked semilunar piece of shale (pl. 9, *b*) from Old Town II may also be an unfinished scraper.

The two ulo-shaped chipped slate blades resemble chipped slate specimens from Prince William Sound, Kachemak Bay, and Kodiak, chiefly from the earlier periods, which may have been for a special kind of ulo or a scraper, or may have been simply unfinished (de Laguna, 1956, p. 151; Heizer, 1956, pp. 48 f.).

Lastly, there are five rather narrow, rectangular chipped stone slabs or flakes (fig. 11, *c*, *d*, *h*), which appear to have been used as scrapers, or perhaps as knives. One long edge, showing signs of use, is slightly curved, suggesting that these specimens might have been classed with the ulo-shaped scrapers. Two are from Old Town III, one from Old Town II, and two from Old Town I. The last (fig. 11, *c*), from Old Town III, may have been used as a saw to cut stone or hard bone.

Several fragments of worked greenstone, chert, and other rock, which might have been used as scrapers, are too uncertain to be listed here.

The paddle-shaped scrapers from Old Town are paralleled by specimens from both early and late prehistoric Chugach sites, although the latter have longer and more slender tangs (de Laguna, 1956, pp. 131–135). There are some similar scrapers from Kachemak Bay III, although these are of ground slate (de Laguna, 1934, pl. 34, *5*, *9*). While chipped paddle-shaped slate blades come from Kodiak, especially from the lower levels at Uyak Bay, they are much larger, and

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Figure 11.—Knives and scrapers. Drawn by Donald F. McGeein. *a*, Knife or weapon blade, chipped chert, from Mound B, lower levels, Old Town II (No. 315); *b*, knife or weapon blade, chipped slate, from Mound B, upper levels, Old Town III (No. 96); *c*, rectangular scraper or saw, sandy schist, from Surface Pit 6, Mound B, upper levels, Old Town III (No. 11); *d*, rectangular scraper, igneous rock, from Mound D, upper levels, Old Town I (No. 889); *e*, paddle-shaped scraper, slate, from Mound B, lower levels, Old Town II (No. 325); *f*, copper scraper for hemlock bark, from Diyaguna'ᴇt (No. Dy/2); *g*, double-edged knife blade, schist, from Surface Pit 6, Mound B, upper levels, Old Town III (No. 82); *h*, rectangular scraper, slate, from Mound B, lower levels, Old Town II (No. 359); *i*, paddle-shaped scraper, slate, from Mound B, upper levels, Old Town III (No. 231); *j*, paddle-shaped scraper, schist, from fill of House Pit 1, Old Town III (No. 520).

are classed by Heizer (1956, pl. 49, *d–f*, p. 51) among the flensing knives. Probably the chipped paddle-shaped scraper is a local form of the Yakutat and Pacific Eskimo, although, of course, long-handled fleshing tools have a much wider distribution.

The boulder chip (cobble flake) scrapers or knives were obviously not common at Old Town, and were also rare at Chugach sites, in striking contrast to Kachemak Bay, where such implements were numerous in all horizons (de Laguna, 1956, p. 131). They also occur on Kodiak ("Teshoa flakes," Heizer, 1956, p. 43). Four examples from Daxatkanada (de Laguna, 1960, p. 110) show that the early historic Tlingit of Angoon also used this type of tool although it has usually escaped the museum collector. Cobble flakes were, and still are, one of the common forms of ulo-shaped scrapers used by the Yukon, Tanana, and Copper River Athabaskans for finishing soft tanned skins of caribou and moose (de Laguna, 1947, pp. 127 ff., 187 ff.; field notes, Atna). Drucker (1950, Trait 788) records a "side scraper," for making buckskin, from the southern Tlingit and Kwakiutl, but without further information. The cobble flake scraper appears to be associated with the tanning of large animal hides, and may thus be considered a tool characteristic of the mainland, and especially of the interior, where skin dressing was most highly developed. (These scrapers are sometimes called "Chi-Tho," cf. Townsend and Townsend, 1961, p. 42.)

Other Yakutat chipped knives or scrapers are irregular and not very distinctive, although Chugach specimens exhibit the same range of types. In both areas, roughly shaped scrapers are almost the only form of chipped stone artifact.

BONE SCRAPERS

A broken scraper made of an animal scapula was found in Old Town II, as was a small piece of bird bone with one sharp edge which may have been a scraper or small knife (pl. 16, *k*). From Old Town III is a trough-shaped piece of whalebone, 11.2 cm. long and 5 cm. wide, which has been sharpened across one end for use as a scraper or gouge. These specimens are too fragmentary and indefinite in character to permit comparisons. Bone scrapers were evidently unimportant at Yakutat, as they were on the Northwest Coast and Prince William Sound, in contrast to Kachemak Bay and Kodiak (de Laguna, 1956, p. 193).

HAMMERSTONES, ANVILS (?), AND MAULS

HAMMERSTONES

Ordinary hammerstones are more numerous than any other type of tool in the archeological collections from the Yakutat area. They are unshaped beach cobbles of tough hard rock, largely metamorphic, and of convenient size to grasp. They range in length from 6.4 to 13.8 cm., in width from 2.4 to 11.4 cm., and in thickness from 1.3 to 6.9 cm. Weights range from 60 to 888 gm., the mode being about 300 gm. A few hammerstones, lighter than 150 or heavier than 600 gm., were perhaps used for special purposes. Variations in shape do not seem to have any chronological significance. Thus, 43 hammerstones are ovoid, 47 have snoutlike protuberances, 29 are rather angular, 10 are roughly elongated or cylindrical (approaching the specimens described below as hand mauls), while the rest are fragmentary or unclassifiable.

About 20 have faceted ends, indicating that they must have been used with a slanting motion; the rest were used to strike vertical blows, as is shown by their flattened or slightly rounded ends. Some have been worn almost flat and smooth by light hammering, while others are heavily battered. Some show marks of abrasion on the sides (pl. 10, *i*) as if they had been used as anvils or manos. One specimen has traces of red paint on the surface.

The proveniences are: Dolgoi Island, 1; Canoe Pass, 1; house pit at Nessudat, 1; Old Town III, 68; Old Town II, 24; Old Town I, 28; and Old Town II or III, 8.

An additional 29 specimens may be called hammerstone-abraders (pl. 10, *f*) because the clear signs of rubbing on the ends, edges, and sides show that they were used for pounding and later for grinding with a back-and-forth motion, so that the facets made by hammering were worn smooth. Seven were evidently used to crush hematite for red paint. The proveniences are: Diyaguna'ᴇt, 1; Old Town III, 19; Old Town II, 5; and Old Town I, 5.

In addition, two pitted hammerstones (pl. 10, *g*) from Old Town III have depressions pecked in both sides for finger grips. The edges have been battered against something hard and angular. One specimen may also have been used as an anvil.

Plain cobble hammerstones are so universally present in sites of the Pacific Northwest that they lack regional or chronological diagnostic value. However, a problem is raised by the great numbers found at Old Town, where ordinary hammerstones represent about 24 percent of the total number of stone artifacts from the youngest part of the site, about 15 percent from Old Town II, and about 21 percent from Old Town I. The proportions would be still higher if the 29 hammerstone-abraders and the few additional miscellaneous specimens were included. These figures contrast strongly with the proportions of hammerstones from the nearest comparable sites: Daxatkanada, a historic Tlingit fort and campsite near Angoon in southeastern Alaska, and at Palugvik, a prehistoric Chugach village site in Prince

William Sound, the youngest levels of which may be contemporaneous with Old Town I. At Daxatkanada only about 4.4 percent of the 228 stone specimens were hammerstones, and at Palugvik only 4.7 percent of the 444 stone artifacts (de Laguna, 1960, p. 102; 1956, pp. 110, 137 ff.). These differences are hard to explain, yet may reflect the various uses to which hammerstones were put.

Experiments showed that signs of wear identical with those on the hammerstones and hammerstone-abraders were produced when hard cobbles were used to pound and grind limestone boulders like those from which most of the lamps at Old Town had been made. The site yielded 34 such lamps (pls. 11 and 12), not counting 12 doubtful or unfinished specimens (see pp. 117–120). Daxatkanada, how ever, contained but four crude stone vessels, one of which might have been a lamp, and Palugvik, though a permanent village, yielded only five lamps. The great number of hammerstones and hammerstone-abraders at Old Town may, therefore, be connected with the manufacture of lamps. These tools may also have been used to work native copper and drift iron, in which Old Town was also particularly rich.

Hammerstones undoubtedly served to shape stone tools such as adzes, scrapers, and knives, and it is obvious that some were used to prepare red paint. The Yakutat natives also suggested their use as pestles to grind or pound native tobacco and such foods as dried seaweed, half-dried fish eggs, and roots ("native potatoes"). Hammerstones were probably employed to crush the calcined shells that were mixed with salmon eggs or seal brains to make a waterproof paste for calking the seams of wooden boxes. Most pestles used to crush and grind food are said to have been of wood.

Pitted hammerstones are very rare in Alaska. Thus, Drucker (1943, p. 50) does not mention them in his classification of Northwest Coast artifacts. They are, in fact, represented by only 4 doubtful specimens from Prince William Sound, 7 from Kodiak, 1 from a historic site on Lake Iliamna, and by 13 pitted stones from all but the earliest levels at Cattle Point on San Juan Island (de Laguna, 1956, pp. 136, 146; Heizer, 1956, pp. 53 f.; Townsend and Townsend, 1961, p. 45; King, 1950, p. 38). These specimens may, however, have been small anvils.

ANVILS (?)

A flat cobble from Old Town II, 14.3 by 9.6 cm. in diameter, is battered on one side as if it had served as an anvil. The opposite side is stained with a dark pigment (carbon?), across which are faint polish lines suggesting use in mixing black paint. A similar specimen from Old Town III was evidently used both as an anvil and as a palette for mixing red paint.

UNHAFTED HAND MAULS OR PESTLES

Five elongated subcylindrical cobblestones, ranging in length from 14.5 to 24 cm., and in diameter from 3 by 4.6 to 4.7 by 8.4 cm., appear to have been used as pestles or hand mauls (pl. 10, *k*). They come from the house pit at Nessudat; Old Town III, three (including one partially shaped granite bar); Old Town II, one; and Old Town II or III, one.

It is curious that no carefully shaped implement of this type was found, unless a stone figurine (fig. 21, *b*), from just under the turf of Mound B (Old Town III), was intended for a pestle. This is a roughly cylindrical piece of sandstone, 10.8 cm. long, 5.9 by 4.1 cm. in diameter, and has been pecked to resemble the head of an animal, perhaps a frog. The base (below the animal's neck) is flat, and shows no signs of use. It may represent a break. Wide shallow grooves form the mouth, outline the protruding eyes and run back along the top of the head. The carving is similar in style to that of a maul head from the Situk River (fig. 21, *d*, described below). Although much less elaborately decorated and in a cruder form of Northwest Coast art style, the Old Town specimen resembles a stone pestle, representing a raven, used by the Angoon ("Hoodsinoo") Tlingit in preparing native tobacco (Niblack, 1890, pl. LXIII, fig. 338). Our specimen may have been intended for a similar function, for the cultivation of native tobacco was reported at Yakutat, and ethnological examples of wooden snuff mortars were seen.

It was perhaps only accidental that we found no clear example of a carefully made pestle or hand maul, since the cylindrical pestle-shaped form with nipple top and the stirrup-shaped type with "handle like a flatiron" are both known from Yakutat (H. I. Smith, 1899, figs. 12, *c*, 13, *f*, p. 365), and are common on the Northwest Coast (Drucker, 1943, fig. 13, types IBI and II). Well-made cylindrical pestles or hand mauls come from Chugach sites (de Laguna, 1956, pls. 21, *8*, 22, *1*), and such implements may also have been used by the nearby Eyak (Birket-Smith and de Laguna, 1938, p. 76). The hand mauls from Uyak Bay, Kodiak Island, are of a somewhat different style, with finger pits around the middle of the cylindrical handle, and one is like a paddle with lateral handle. None has the usual pestle shape (Heizer, 1956, p. 46).

Shaped hand mauls and pestles are common on the Northwest Coast from the Tlingit (Keithahn, 1962, fig. 3) to the Fraser River Delta, although the more elaborate types are replaced by simple rectanguloid or pear-shaped forms, or by cobblestones, in the Milbank-Queen Charlotte Sound area (Drucker, 1943, p. 124; 1950, Trait 417). In Coast Salish territory, the cylindrical pestle or hand maul reappears in such sites as Beach Grove, Marpole (Eburne), Whalen Farm II, and Musqueam (with nipple top, as distinguished from the flat-topped hand mauls of late prehistoric and historic times). Here Borden (1950, passim; 1951, p. 45; 1962; and personal communication) is inclined to interpret it as the old food pounder of the interior which has been brought to the forested coast and adapted to driving wedges for a heavy woodworking industry. It should be noted that the diagnostic feature distinguishing Northwest Coast pestles from hand mauls is that the former have rather rounded bases, the latter concave striking surfaces. On both the coast and the interior plateau the range of forms is considerable, and the direction of diffusion very difficult to judge (Osborne, Caldwell, Crabtree, 1956, p. 123). It should be noted that the pestle or hand maul does not occur in other sites in the Coast Salish area such as Cattle Point, Whalen Farm I, Locarno Beach, and Point Gray, although some of these are otherwise similar in contents and age to Marpole (Eburne) (Borden, 1950, pp. 13 f., 15 f., 20; 1962). However, neither presence nor absence of such tools—nor of bone nor antler wedges, for that matter—can indicate the development of woodworking skills, since among the Northwest Coast Indians, the Yakutat, and the Chugach, most wedges were of wood and were usually driven with boulders or wooden mauls, none of which are likely to be preserved in archeological sites.

HAFTED MAUL HEADS

A limestone maul head (pl. 10, *j*), with a shallow hafting groove extending three quarters of the way around the circumference, came from Old Town III. It is 16.3 cm. long and 9.4 cm. in diameter at the damaged poll or butt. It narrows rather abruptly to a diameter of 6.5 cm. at the smooth, slightly convex striking end, which is set off by a small shoulder.

In 1949 we saw a limestone head for a hammer or maul which had been found in the bed of the Situk River slightly above the Government weir and the remains of the historic village (see fig. 21, *d*). It is about 18 cm. long, 12 cm. in diameter, and flat on the under or hafting surface, with a broad groove around the convex sides and top. In style it resembles the stone head from Old Town III and may also represent a frog. Large oval eyes and a broad mouth are indicated by shallow grooves; at the other end, flexed hind legs or haunches are similarly suggested.

Grooved stone heads for mauls or hammers have a wide distribution among the Eskimo, adjacent Athabaskans, and northern Northwest Coast Indians (Birket-Smith, 1953, pp. 220 ff.; Drucker, 1943, type I, p. 123; 1950, Trait 426; Heizer, 1956, p. 46; de Laguna, 1947, p. 165; 1956, pp. 139 ff.; Townsend and Townsend, 1961, pl. 3, *8*; Keithahn, 1962, fig. 2). They are known from the Canadian Thule culture, from Punuk times (?) on the Kobuk River, and from protohistoric northern Alaskan Eskimo and Tena sites. They occur among the Pacific Eskimo: at Kodiak (earlier periods especially, contemporaneous with Kachemak Bay III?), on Kachemak Bay (period unknown), and Chugach sites (late prehistoric only?). They have not been reported from the Copper River Eyak. Drucker finds them especially characteristic of the Tlingit, Tsimshian, and Haida, but records no examples south of the Bella Coola and the northern Kwakiutl. Although found among the Interior Salish, they are unknown from the Coast Salish or from sites in their territory. In distribution and in method of hafting, these grooved maul heads suggest a relationship to the heavy splitting adz. although they have a wider distribution than the latter, especially in the north. While particularly characteristic of the Pacific Eskimo and northern Northwest Coast, the grooved maul head seems to make a relatively late appearance and to remain less important than the ordinary cobble hammerstone. According to Yakutat and Angoon Tlingit informants, most mauls (for driving wedges, stakes for fishtraps, etc.) were of hardwood, and this may always have been so, even though Drucker (1950, Trait 427, p. 256) suggests that the "wooden maul of trunk and branch" used by the Haida, Tsimshian, and Tlingit, may not be aboriginal.

STONE SAWS (?), GRINDING SLABS, WHETSTONES, AND PAINT

STONE SAWS (?)

Although fragments of sawed slate were found, no clearly identifiable stone saws were recovered. A specimen of sandy schist from Old Town II, listed among the irregular rectangular scrapers, shows wear suggestive of use as a saw. From Diyaguna'ᴇt is a flat rectangular slab of sandstone, 11.8 by 5.6 by 0.9 cm., with thin edges and rounded corners, but it is too badly weathered for certain identification. Keithahn (1962, p. 72) lists nine saws from Yakutat in the Alaska Historical Museum at Juneau.

Stone saws were found at sites on the Kobuk River (Giddings, 1944, p. 119), and at Tena sites on the Yukon. They appear in Kachemak Bay III, and are numerous on Cook Inlet and Prince William Sound, rare on Kodiak and the Aleutians (de Laguna, 1943, pp. 62, 175 ff.; 1947, pp. 123, 150, 169 ff.; Birket-Smith, 1953, p. 212; Heizer, 1956, p. 46). Tlingit examples were found in the Angoon area, although not recognized by the natives (de Laguna, 1960, pl. 7, *q*, *r*, p. 105), and they may have been used by the Nootka. Stone saws also occur at sites in Coast Salish and Interior Salish country, but are otherwise not documented from the Northwest Coast. In the Fraser Delta and San Juan Island area they are found as early as the Locarno Beach Phase and the Developmental and Maritime Phases on Cattle Point (Borden, 1962; King, 1950, p. 39).

Chugach saws (de Laguna, 1956, pp. 127–130) were very numerous, and seemed to be used especially in making long slender slate weapon points and in cutting out the blades for planing adzes from greenstones and other hard rocks. Stone saws declined slightly in number during the later prehistoric period on Prince William Sound, perhaps because of the lessened importance of the planing adz. An extension of this trend may explain why only two very doubtful specimens were found at Yakutat. However, the Yakutat may have cut stone by means of wood or bone tools and sand. This apparently simple method has a wider distribution than has the stone saw, and it is to be inferred where sawed stone is present but the stone saw has not been found.

GRINDING SLABS

There are relatively heavy slabs (four of sandstone, two of microcrystalline rock, one of granite), ranging in size from 25 by 18 cm. to over 37 by 20 cm., and in thickness from 5.5 to 15 cm. One or both surfaces have been ground flat or even concave from use. Some had obviously been used to sharpen and polish stone and bone implements, and two had been used to grind red paint. Our informants said that edible roots and medicinal plants were ground on such slabs. No handstones (manos) were found, unless the hammerstone-abraders served such a function.

In the fill of House Pit 1, two freshly sharpened splitting adzes (pl. 5, *b*, *d*) were found cached under one grinding slab on which they had probably been sharpened. A grinding slab from a cache below this house pit is smeared with red ocher, and is made of such extremely hard rock that it would have served better as a mortar than as a grindstone.

The proveniences of the specimens are: five from Old Town III (including two from the fill of House Pit 1, and one from the pit below it), two from Old Town II (on and below the floor of House 8). These locations, and the weight of most of the specimens, suggest that the grinding slabs were used at or near the places where they were found.

A few grinding slabs are known from sites on Prince William Sound, Kachemak Bay, Lake Iliamna, and the Aleutians. In the last area they are restricted to the preparation of paint, while lamps on Kodiak were sometimes used for the same purpose. Manos or hand stones for use with grinding slabs occur on Kachemak Bay, Lake Iliamna, and the Aleutians (probably also on Kodiak), although they were not identified at Chugach sites (Hrdlička, 1944, pp. 328, 341; Heizer 1956, pp. 53 f.; de Laguna, 1956, pp. 124 f., 267, Townsend and Townsend, 1961, pl. 3, *1–7*). Grinding slabs are not common among Eskimo outside of Alaska. Drucker (1950, Trait 949, p. 269) reports mortarlike "paint grinding pans of stone" from the central and northern Northwest Coast tribes (among whom the Tlingit should be included), but these were evidently used without handstones. Aside from these specimens, large grinding slabs are rare or absent on the Northwest Coast, and we have to go to northern California before the metate and mano become characteristic tools. The grinding slabs at Old Town suggest, therefore, affiliations with the Aleut and Pacific Eskimo, rather than with the Northwest Coast, and such ties would be closer if any of the hammerstone-abraders or abraded cobblestones had been used as manos with the grinding slabs.

WHETSTONES

Whetstones of three distinguishable shapes were found: bar-shaped, brick-shaped, and double-concave, as well as miscellaneous and fragmentary specimens. They total 28, and, with one exception, are of abrasive materials, ranging from fine siltstone to sandstone.

The seven bar whetstones (pl. 10, *c*, *e*) are from 8.7 to 14.8 cm. long, 1.4 to 4.3 cm. wide, and 1.1 to 1.8 cm. thick. Most are carefully made. All come from the older parts of the site: four from Old Town II (including a specimen of hard, fine-grained metamorphic rock), and three from Old Town I.

There are five brick-shaped whetstones. Except for one of shale from Canoe Pass, the rest are of sandstone, coarser in grain than that used for the bar whetstones and less suited than the latter for delicate grinding and polishing. They range in length from 8.4 to (14.3) cm., in width from 4.7 to 7.4 cm., and in thickness from 2.3 to 3.2 cm. One comes from Old Town III, two each from Old Town II and I.

There are also four broken sandstone whetstones, with both surfaces ground concave. When complete, they may have been oval or circular, and up to 20 cm. in diameter. Perhaps they should be classed with the grinding slabs. Proveniences are: one from Old Town III, two from Old Town II, and one from Old Town II or III.

Lastly, there are 3 cobblestones with marks of abrasion (whetstones or manos?) and 14 whetstones, chiefly broken slabs of sandstone or siltstone, too irregular or varied in shape to be classified (pl. 10, *d*, *h*). Proveniences are: 1 from Nesŝudat, 1 from Diyaguna'ᴇt, 9 from Old Town III, 2 from Old Town II, 2 from Old Town I, and 1 from Old Town II or III.

Whetstones of the same types have been found at Kodiak, Kachemak

Bay, and Prince William Sound, and at various Tlingit sites in the Angoon area (Heizer, 1956, pl. 35; Hrdlička, 1944, fig. 141; de Laguna, 1934, p. 62; 1956, pp. 124 ff.; 1960, pp. 105 f.). The fine-grained sandstone whetstones of the Copper River Eyak, used for sharpening copper knives, and their bar whetstones for shaping spoons of mountain goat horn (Birket-Smith and de Laguna, 1938, pp. 75, 88 ff.) were probably similar to the Yakutat bars of fine siltstone. Whetstones of this material are especially characteristic of the Tlingit who designate them by a special word. The Yakutat natives believed that to get siltstone caused bad weather (because they had to be "stolen from the glacier"?). Drucker (1943, p. 57) notes that small whetstones from the Northwest Coast "vary from neatly finished flat, rectangular blocks to irregular shaped fragments with a central depression produced by grinding. The former can be set off as a well defined type, while the latter form a rather loose and heterogeneous group."

PAINT

There are 31 artifacts or unworked stones that have been used to crush and mix red pigment, or are smeared with red ocher. These include 1 hammerstone, 7 hammerstone-abraders, and 2 grinding slabs, already mentioned, while the rest are unworked cobblestones boulders, or slabs. The proveniences of these are: 22 from Old Town III, of which 10 are associated with House Pit 1 or House 9; 5 from Old Town II; 1 from Old Town I; and 3 from Old Town II or III.

There are also 11 small lumps of red ocher (hematite), showing marks of gouging or rubbing, which have obviously been used for paint (pl. 17, *cc–ee*). Some of these were clay stones that had been baked to increase their red color; others were simply natural hematite lumps. Eight examples of red paint come from Old Town III, two from Old Town II, and one from Shallow Water Town on Little Lost River.

According to the natives, red ocher was obtained from deposits between Turner and Hubbard Glaciers at the head of Disenchantment Bay. It was crushed and mixed with mountain goat tallow and used to paint artifacts and to decorate the face. Face paint was kept in a little skin bag and was applied with the fingers to make lines and dots, or with a wooden stamp carved in the totemic crest of the sib.

Natives did not refer to the burning of iron oxides to increase their redness, as was apparently practiced at Old Town and also by the Angoon Tlingit (de Laguna, 1960, p. 104). The burning of clay to make red paint was fairly common on the central and southern

Northwest Coast, naturally (and artificially?) baked red and yellow shales were used in Kachemak Bay III (de Laguna, 1934, p. 117; 1947, p. 226), but the Chugach seem to have found hematite that needed no further preparation than the addition of fat or oil. This was probably true of most Yakutat paint.

Another type of reddish paint, worn by women to protect their faces from the sun, was made from the bark of the red cedar (?), pieces of which sometimes float ashore on the ocean beach. This was ground to powder on a rough whetstone, and mixed with pitch and tallow. A broken sandstone slab from Old Town II has one surface smeared with a fibrous red pigment, apparently of this type.

Such protective paint corresponds to that described by Niblack (1890, p. 259) for the northern Northwest Coast, which was brownish-black in color and was made from charred fungus and grease. Some kind of paint worn on the hands and face to protect them against sunburn and mosquitoes was universal on the Northwest Coast (Drucker, 1950, Trait 649). Chugach women also prized a light complexion, preserved by such means (Birket-Smith, 1953, p. 71). In general, Tlingit face paint, worn against the sun or for mourning, is described as black.

At Yakutat, white powder for whitening skins, and also white paint (?), was made from white clay found near the head of Disenchantment Bay. Black paint was presumably soot mixed with fat, although our informants had little to say about it.

Unfortunately, we have no archeological examples of painted designs. Presumably, implements and utensils were painted in Northwest Coast style in the past, as they were until recently, but that these designs may have been simpler is suggested by the carved archeological specimens. Painting in Northwest Coast style was practiced by the Copper River Eyak, Chugach, and Koniag, although we do not know the antiquity of this style in southwestern Alaska, nor, for that matter, where it actually originated. One Chugach pictograph (de Laguna, 1956, fig. 22, *c*), in which the eye is reminiscent of this style, suggests that it was practiced on Prince William Sound in prehistoric times. No pictographs were seen or reported in the Yakutat area, although they occur among the Tlingit, and are not uncommon on Prince William Sound and Cook Inlet (de Laguna, 1934, pp. 149–154; 1956, pp. 102–109; 1960, fig. 7, pp. 73 ff.).

STONE LAMPS AND FIRE MAKING

STONE LAMPS

In the collections there are 35 lamps, 12 unfinished specimens, and 4 specimens that may be toys. The regular lamps fall into two categories: (1) well made and (2) crude, and the latter may be further subdivided on the basis of size. Lamps were most often made by hollowing out easily worked beach cobbles of limestone. Some of the more carefully finished lamps, shaped inside and out, were of hard rocks such as schist, basalt, and metamorphosed sediments.

Within the memory of living informants, stone lamps were used for light, either in the main room of the old-fashioned house or in the small sleeping rooms. Seal oil was used for fuel and the wick was a twisted rag or a bunch of beach grass. When shown pictures of lamps from Cook Inlet, one informant recognized these and specified that the lip at the narrower end was to keep the wick from slipping into the oil and becoming extinguished if the lamp were moved. She also said that the groove in the bottom of the bowl was to retain oil after the rest of the reservoir went dry. Yakutat lamps also had such features, she said, although we suspect that her report of a lamp in her father's house with four wick lips may be exaggerated, or else she referred simply to the use of four wicks in one plain lamp.

Ten carefully shaped lamps were found: six from Old Town III, three from Old Town II, and one from Diyaguna'ᴇt. An additional fine lamp from the last site was seen in the house of one of our friends. These lamps were circular, or nearly so, and measured from 10 to 24 cm. in diameter, from 4.0 to 8 cm. in height, with reservoir depths of only 0.8 to 2.5 cm. Three lamps have a groove or ledge running around the inside of the bowl (pl. 11, *e*, and fig. 12, *b*; fig. 12, *c*). The rest lack this feature, although four, at least, have a small depression in the bottom of the reservoir (pl. 11, *a*, and fig. 12, *a*; pl. 11, *d*, pl. 12, *c*).

Of the six lamps from Old Town III, one (fig. 12, *c*) has a broad groove on the flaring rim and another just inside, both probably ornamental rather than utilitarian. In the bottom of the reservoir is a broad, shallow V-shaped depression, like the groove in the bottom of many Pacific Eskimo lamps to direct the flow of oil to the wick. Another lamp has a single broad groove inside the rim (pl. 11, *e*, and fig. 12, *b*). The lamp found by one of the natives at Diyaguna'ᴇt (pl. 3, *a*) has a shallow wick lip in the broad, rounded rim, while the bottom of the bowl is excavated to leave a wide, sloping, but not pronounced, ledge inside the rim.

None of these particular features was found on the three specimens from Old Town II. Instead, one of the latter is a circular lamp with a plain rim and a small depression in the middle of the bowl (pl. 11, *a*; fig. 12, *a*). Also there is what appears to be the fragment of a similar lamp, although the center of the reservoir is missing. The third lamp from Old Town II has flaring walls and a flat base, while the inside of the bowl is gently rounded.

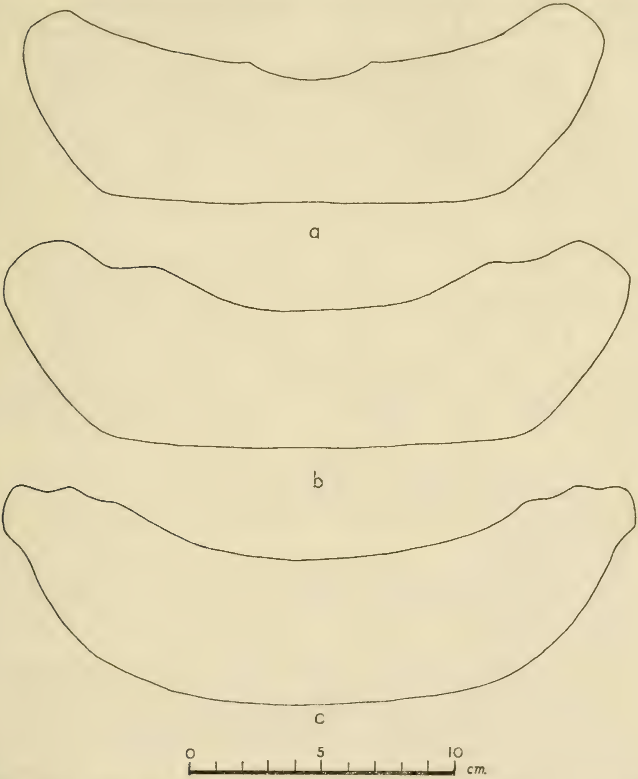

Figure 12.—Profiles of stone lamps. Drawn by Donald F. McGeein. *a*, Lamp with plain rim and depression in the bowl, basalt, from just above floor of House 8, Old Town II (No. 656), (see pl. 11, *a*); *b*, lamp with grooved rim, schist, from fill of House Pit 1, Old Town III (No. 742), (see pl. 11, *e*); *c*, lamp with grooved rim, basalt, from Mound B, upper levels, Old Town III (No. 518).

Three rather plain circular lamps with a small depression in the bottom of the reservoir (pl. 11, *d*) are from Old Town III. Two of these (pls. 11, *b*, 12, *c*) were found together, upside down, in the fill of House Pit 1 as if they had been cached. There is also a fragment of what appears to have been a similar lamp.

A fragment of a well-made circular lamp with flat rim was also found at Diyaguna'ᴇt. Although the middle is missing, the bottom probably lacked a central depression.

The unshaped lamps are simply limestone cobbles with a hollow pecked into one surface. The natural shapes of stones selected are roughly circular, ovoid, rectangular, and triangular (pls. 11, *c*, 12, *c*, *e*, *f*). Only a few have been slightly worked on the outside to produce a more regular shape. Most of these crude lamps tilt slightly to one side or one end, suggesting that the wick was placed at the lowest point of the rim, although they lack a wick lip. One specimen, with incrustations of carbon indicating its use as a lamp, is a naturally hollow stone, so poorly balanced that it must have been propped up to prevent the oil from leaking out of the end.

These lamps may be subdivided into two groups on the basis of size: 12 large lamps with a maximum diameter from about 14 to 20 cm., and 13 smaller lamps with a maximum diameter from about 8 to 11.5 cm., although no sharp distinction can be made. The depressions in these lamps vary from 0.5 to 2 cm. in depth. Possibly the shallowest ones are unfinished, or the walls of the lamps may have weathered down. Some of the smaller specimens may have been toys.

There are also 12 limestone cobbles, 7.3 to 11.7 cm. in diameter, with pecked depressions on one face that are clearly too small or too shallow to have been serviceable as oil reservoirs. These may well be unfinished lamps.

The proveniences of these unshaped and unfinished lamps are: 11 large, 7 small, 9 unfinished from Old Town III; 1 large, 4 small, 1 unfinished from Old Town II; 2 small and 2 unfinished from Old Town I.

Lastly, four small limestone cobbles, only 5.1 to 6.1 cm. in diameter, with depressions 0.3 to 0.5 cm. deep, pecked in one face, may be toy lamps (pl. 12, *a*, *b*, *d*). They resemble the larger specimens identified as crude lamps. Two are from Old Town III, and one each from Old Town II and I. Our informants said that little girls used to play with toy lamps. These were described as clamshells filled with oil and actually lit. These four specimens were probably too small for such realistic use, although they may have been toys, as were perhaps some of the small crude lamps with very shallow reservoirs.

Stone lamps seem to be more numerous at Old Town in proportion to other artifacts than at any other site in the Pacific Northwest. This is probably due to the ease of working limestone cobbles, even though we may have been mistaken in our identification of some of the specimens. The crude cobblestone lamps of Old Town correspond perfectly to Abercrombie's description of lamps he saw among the Copper River Eyak in 1884, even though our Eyak informants said that lamps were of clamshells (Birket-Smith and de Laguna, 1938, pp. 43, 70). Equally crude lamps have been found on Prince William Sound, Cook Inlet, and the Aleutians, but these are usually of hard rock.

In general, the Yakutat lamps belong to the ancient pointed oval type (de Laguna, 1947, pp. 252 ff.; Birket-Smith, 1953, pp. 184 ff.), common to the Aleut-Pacific Eskimo, Near Ipiutak, Norton, and Dorset cultures. The Yakutat lamps, however, have a style of their own, for they tend to be circular rather than oval. The shelf or groove inside the rim is not a characteristic of other southwestern Alaskan lamps, and the depression in the bottom of the bowl has been reported only from a few oval lamps from the lower levels at Uyak Bay, Kodiak Island (Heizer, 1956, pp. 35 f.).

The larger Yakutat lamps correspond roughly in size to the regular Chugach lamps, with maximum diameters of 12 to 26.6 cm., or to Koniag lamps. The smaller Yakutat lamps, with diameters of 8 to 11.5 cm., correspond to Chugach specimens of 9.3 to 12 cm. that were considered to be hunters' lamps (de Laguna, 1956, pp. 144 ff.). Similar small lamps for emergency use on hunting trips are known from Kachemak Bay, Kodiak, and the Aleutians. Yakutat informants did not mention hunters' lamps, and the Old Town specimens may have been used by little girls. The still smaller Yakutat examples, 5 to 6 cm. in diameter, overlap in size some of the Aleut and Koniag hunters' lamps, and also the tiny Aleut specimens, some less than 4.5 cm. in length, which Jochelson (1925, p. 74) considered to be toys or mortuary offerings. No such tiny lamps were found on Prince William Sound or Kachemak Bay. Heizer (1956, p. 40) acknowledges that it is hard to draw any line between hunters' lamps and "pitted stones."

Stone lamps appear sporadically on the Northwest Coast. They are known from the Chilkat Tlingit and southern Tsimshian (Krause, 1956, p. 144; Drucker, 1950, Trait 963), while shell lamps were used by the southern Tlingit, Tsimshian, and Kwakiutl (Drucker, 1950, Trait 964). Although a few crude stone vessels, one or two of which might have been used as lamps, were found at the historic Tlingit fort, Daxatkanada, their function is unknown, and Angoon informants said they had never used stone lamps (de Laguna, 1960, p. 103). Drucker (1943, pp. 54 ff.), in discussing archeological stone vessels from the Northwest Coast warns us against the assumption that they were lamps, since many were mortars for tobacco, berries, or paint, and others may have been dishes. (See also Keithahn, 1962, p. 73.) Such stone vessels, identified as mortars, appear in the Fraser Delta sites of Marpole (Eburne), Point Gray, and Whalen Farm I, and what were tentatively identified as lamps were found at Locarno Beach II (Borden, 1950, pp. 14, 17, 20). Yakutat lamps, however, are obviously most closely related to those of the Pacific Eskimo.

FIRE MAKING

A small battered lump of quartz from Old Town I was identified by the natives as a strike-a-light, and a similar function was suggested for one of the hammerstones. The hand drill, cord drill, and bow drill also were used at Yakutat to make fire, but only the hand drill was used for holes.

Drucker (1950, Trait 957) found that the Tlingit were the only Northwest Coast tribe to make fire by percussion. Battered quartz pebbles found at Daxatkanada were recognized as strike-a-lights by the Angoon Tlingit, who, like the Yakutat natives, said that wax from the ears was put on one of the stones or on the tinder to make the spark catch better (de Laguna, 1960, p. 102). The Copper River Eyak denied making fire by percussion (Birket-Smith and de Laguna, 1938, p. 77). Both quartz and pyrites for strike-a-lights were found in the Aleutians and Prince William Sound, although drills were also employed (de Laguna, 1956, p. 192). Quartz "hammerstones" from Kachemak Bay may have been strike-a-lights (de Laguna, 1934, p. 59), but it is unfortunate that we do not know how the ancient Pacific Eskimo of Kachemak Bay I made fire, since Birket-Smith (1953, p. 184) believes that percussion with stones was the earliest method employed by the Eskimos, and that the bow drill for making fire was later.

The hand drill was universally employed on the Northwest Coast for making fire (Drucker, 1950, Trait 954; Barnett, 1939, Trait 382). In addition, the bow drill was used by the Tlingit, southern Haida, and northern Kwakiutl, although Drucker (1950, Trait 955, p. 269) is not sure that it was aboriginal.

It would thus appear that with respect to methods of making fire the Tlingit and Yakutat show a greater resemblance to the Eskimo than to the other tribes of the Northwest Coast.

WEAPONS

STONE CLUB HEAD AND STONE PICKS

A double-pointed head of hard crystalline rock for a war club (pl. 5, *c*) was found on the floor of House 8 in Old Town II. It has a lashing groove between two ridges that completely encircle the head and would have been lashed to a T-shaped handle like the blade for a splitting adz. Both points are broken off, but when complete the specimen was probably 16 cm. long. The diameter at the hafting groove is 5.8 by 3.3 cm.

There are also three broken or unfinished, roughly chipped stone picks, from 12.3 to over 17 cm. long, and from 1.6 by 4 cm. to 3.8 by 5 cm. in diameter. Two are from Old Town III, the third from Old

Town I. We do not know whether they were used as tools for digging or as weapons, but it seems more likely that they were the heads or spikes for war clubs.

One informant described a "pick" used against enemies or animals, which had a hard stone or bone head, 12 to 18 inches long, lashed to the top of a T-shaped handle. One end of the head was sharply pointed, the other had a peglike projection, just long enough to perforate the skull. The informant said he had found a stone weapon of this kind on Lost River and had seen a similar bone one at Diyaguna'ᴇᴛ.

The double-pointed club head is known from the late prehistoric Chugach, the Tena (at least those on the Yukon above the Tanana), the Tlingit, Tsimshian, and Haida (de Laguna, 1947, pls. x, *9*, xɪ, *2*, pp. 162–164; 1956, p. 130; Birket-Smith, 1953, p. 216). A similar object is published by Keithahn (1962, fig. 1, *c*, p. 69) as an ice ax. As far as we can discover, no other American groups used this type of weapon, and it probably originated on the northern Northwest Coast.

The chipped-stone picks from Old Town, which may also have been weapons, are smaller than somewhat similar Chugach specimens, all probably from late prehistoric sites. Hrdlička (1944, p. 333) mentions what may be a stone pick from the upper level at Uyak Bay, but the type is otherwise unknown from Kodiak. Some form of war club or "slave killer" seems to be universal on the Northwest Coast, although most Tlingit examples have nicely polished stone or bone picks hafted by insertion into the handle (Niblack, 1890, pl. xʟᴠɪ, figs. 257, 258). A club head of this kind was found at Daxatkanada near Angoon (de Laguna, 1960, p. 102). Keithahn (1962, figs. 6 and 7, pp. 73 f.) describes several Tlingit varieties of fighting picks, slave killers, and stone clubs.

LARGE WEAPON BLADES

In dealing with archeological specimens, especially with blades found without hafts, it is usually impossible to distinguish between daggers, large flensing knives, and spears. Even size is not sufficient to separate lance and dart points from blades for arrows or harpoon heads, although the latter are usually smaller. Archeological examples of large weapon blades from Yakutat include three of chipped stone, three fragmentary specimens of ground slate, a bone blade, an iron spearhead, and an iron dagger. Since the same forms of weapon blades are frequently encountered on the Northwest Coast and in southwestern Alaska in ground slate, bone, copper, and iron, we can assume that the last two, admittedly modern iron specimens from Yakutat, illustrate the types of spears and daggers made in earlier times. In addition, there were also found smaller blades of slate, copper, and bone for lances and arrows.

These various weapon blades will be described in the following sections.

DAGGER

Although no large copper daggers or spearheads were found, these were remembered by our Yakutat informants. Daggers were worn by men in a sheath hanging across the chest, and were called in Tlingit by a word meaning "something close to one's hand." These weapons were probably also made with slate blades.

An iron dagger, or large double-edge knife (fig. 13, *b*), was found at Diyaguna'ᴇt. Although the metal was probably obtained from White men, the shape suggests native workmanship, but it may also reflect something more than purely aboriginal skill in metalworking. The specimen had originally a total length of about 27 cm., and the blade a width of about 3.5 cm., although the edges and point are now broken. The handle has been wound with cord to make a comfortable grip, and ends with two rectangular ears. The blade itself has two broad concave facets down the middle of each side. This knife is evidently of the same kind as one of the copper daggers seen by Dixon at Yakutat in 1787 (Dixon, 1789, fig. 4, opp. p. 188; Niblack, 1890, pl. xxvii, fig. 116, p. 284). The Tlingit also used stone-bladed daggers, as well as those with copper and iron blades (ibid., fig. 108, *b*, *c*, pls. xxv, xxvii). Copper daggers were used by the Tena, Kutchin, Tanaina, Atna, Eyak, Chugach, and Tutchone of southwestern Yukon Territory (de Laguna, 1947, p. 181; MacNeish, 1960, pl. vi, *9*).

The bone blade from Old Town III (fig. 13, *a;* see below) may also have been a dagger. Bone daggers are known from the Punuk and Thule Eskimo, from Kachemak Bay III, and from sites on Kodiak and Prince William Sound, and also from the Aleut, Tena, Tanaina, Tlingit (including the occupants of Daxatkanada), Haida, Tsimshian, Kwakiutl, and Coast Salish, but not from the Nootka (de Laguna, 1947, p. 181; 1956, pp. 193–195; 1960, p. 115; Heizer, 1956, p. 75, pl. 71, *p*, *q;* Drucker, 1950, Trait 536; Barnett, 1939, Traits 125–127). Some of these bone daggers antedate metal weapons; others seem to have copied them or been influenced by them.

Thus there is no doubt that the dagger was a weapon common in western America and that it has at least a moderate antiquity here (Birket-Smith, 1953, p. 205).

IRON SPEAR

That the inhabitants of Yakutat formerly made tanged lance blades of slate or copper is suggested by one of iron, said to have been found on the ocean beach near Nessudat (fig. 13, *d*). This specimen is 29.5 cm. long, with a shouldered tang 10 cm. long and 1.7 cm. wide. The blade has a maximum width of only 2.5 cm., and is lenticular in cross section. According to the natives, the spear formerly used in hunting bears had a double-edged blade like that of a dagger, about 14 inches long, that was attached to a handle 6 or 7 feet long. A similar spear or lance, but with a handle only 4 feet long, was used for other game and to dispatch wounded seals and other sea mammals. The length of the spear used in war was not specified.

A spear or lance for war and hunting is an ancient and widely distributed weapon among the Northwest Coast Indians, and the Pacific Eskimo and Aleut. It is reported ethnologically and represented archeologically by long blades of slate and bone (Birket-Smith, 1953, p. 182; Heizer, 1956, p. 49). Thus, all of the northern and central Northwest Coast tribes used long spears for bears, and short bone-tipped spears for war. The latter were also employed in hunting mountain goats by the Tlingit, Tsimshian, and mainland Kwakiutl, and in hunting sea lions by the Tlingit. The Nootka dispatched whales with lances armed with a long, slender, bone point (Drucker, 1950, Traits 149, 168, 174, 189, 538, and 540). The Coast Salish used war spears with slate or bone blades, and some also hunted the porpoise with spears (Barnett, 1939, Traits 237, 1018–1020, 1022).

BONE WEAPON BLADE

A slender leaf-shaped bone blade with tangless rounded butt, originally about 19 cm. by 2.8 by 1.3 cm., was found in Old Town III (fig. 13, *a*). This specimen could have been for a dagger, knife, or spear, like the bone weapon blades from Daxatkanada near Angoon (de Laguna, 1960, p. 115, pl. 9, *r–t*).

LARGE DOUBLE-EDGED SLATE BLADES

Ground slate weapon blades were not numerous in the collections from the Yakutat area, although several types were represented. There are three fragments of large blades for flensing knife, dagger, or spear; when complete they may have resembled the large bone blade described above. Two pieces of the same slate blade were found in Old Town II (fig. 14, *b*); the larger piece in the midden above the ruins of the Storage House, the tip in Subsurface Pit 38 below the floor. The broken blade is now (8.7) cm. long and (3.1) cm. wide, and 0.4 cm. thick, but when complete was presumably much longer and somewhat wider. A smaller fragment of a large faceted slate blade (fig. 14, *c*) is from Old Town III. The third fragment is the butt end of what was probably a large blade and comes from an unknown level at Old Town.

Although these specimens are broken, we can assume that at

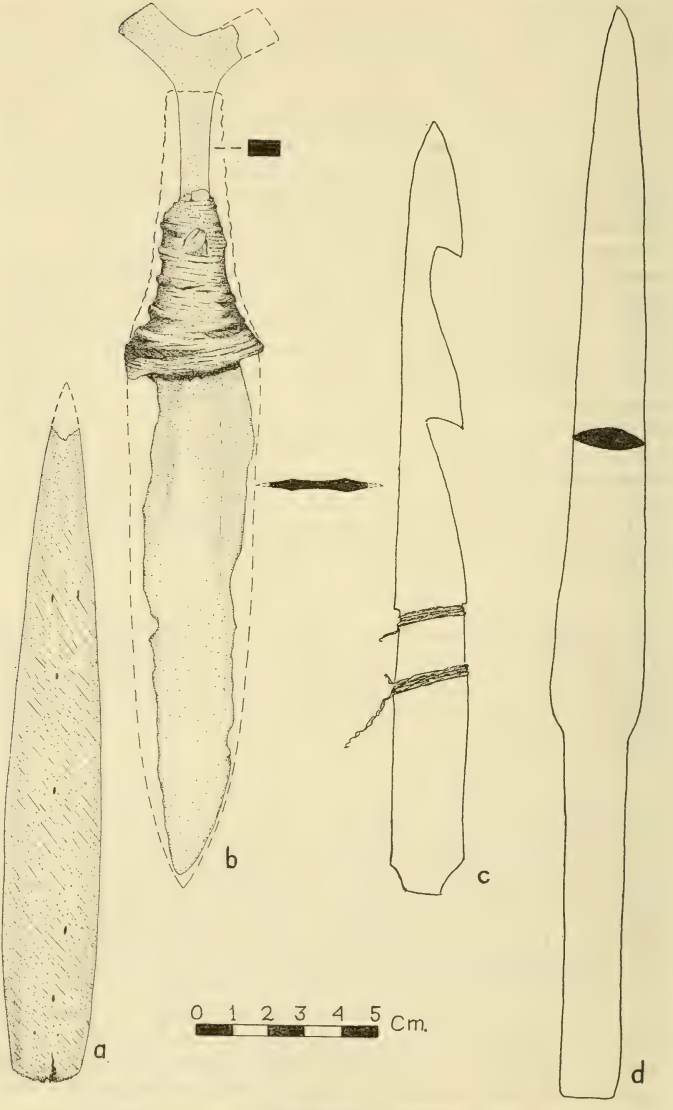
a
b
c
d
0 1 2 3 4 5 Cm.

FIGURE 13
(For legend, see opposite page.)

Yakutat some of the larger slate blades were leaf shaped, while others were tanged, especially since both shapes are represented among the smaller slate and bone arrowheads described below.

Double-edged slate blades, with or without tangs, and of various sizes, are widely distributed types among the Pacific Eskimo, and are apparently older than forms with barbs (de Laguna, 1947, p. 174; 1956, pp. 155, 270; Heizer, 1956, pp. 50 f.). Drucker (1943, pp. 42, 120, 123 f., fig. 7, *a*, *b*) reports both tanged and untanged forms from the Tlingit. They are rare among the Tsimshian, and virtually absent on the central Northwest Coast, but become common again in ancient sites of the Coast Salish area, especially Marpole (Eburne), and Whalen Farm I and II. Large slate weapon blades with hexagonal cross section were common at Locarno Beach on the Fraser Delta, as were other double-edged slate blades (Borden, 1950, pp. 16, 20; 1951, pl. ii, *1–3*; 1962). King (1950, pp. 30, 34, fig. 11) finds the large leaf-shaped types the earliest at Cattle Point on San Juan Island, with smaller blades, stemmed forms and triangular shapes appearing later; also that there is in general a parallel development of slate blades in the Gulf of Georgia—Fraser River area and in Pacific Eskimo territory. Borden attributes this to diffusion of slate grinding from the ancient inhabitants of the Coast Salish area to the north.

AWLLIKE SLATE POINTS

From Old Town III, Old Town I, and from Old Town II or III there are three fragments of slender slate blades, presumably for small lances, that resemble the points of awls. Two narrow strips of sawed slate from Old Town I (fig. 14, *f*) may be unfinished points of the same type. On the basis of these fragments we can deduce that the blades were probably over 8.5 cm. long, and were about 1.5 cm. wide and 0.5 cm. thick, rounded in section at the point, but faceted further down. The fragment of unknown age has a pronounced diamond-shaped cross section, and a butt (fig. 14, *h*) from Old Town I has a flattened hexagonal section, with a small tang set off by a pair of notches to facilitate hafting.

Many slate points, presumably used for lances by the Pacific Eskimo and Northwest Coast Indians, are very long and slender. They range from heavier faceted points like Drucker's type II "bayonet points" (1943, p. 42, fig. 7, *e*, *f*) to "pencils," that are

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Figure 13.—Blades and points for large weapons. *a*, Bone blade for lance or dagger, from Mound B, upper levels, Old Town III (No. 292), drawn by Donald F. McGeein; *b*, iron dagger with cord-wrapped handle, from Diyaguna'ᴇt (No. Dy/3), drawn by Donald F. McGeein; *c*, modern Yakutat salmon harpoonhead, made from a file, sketched in a smokehouse on the Ankau lagoon by F. de Laguna; *d*, iron blade for lance, reportedly found on the ocean beach near Nesšudat, sketched at Yakutat by F. de Laguna.

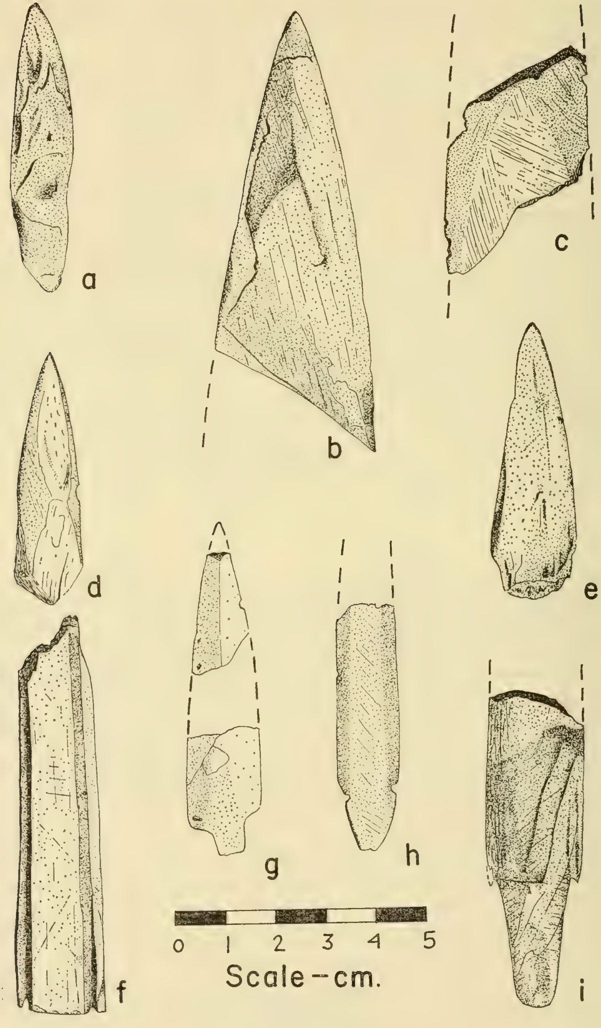
a
b
c
d
e
f
g
h
i
0
1
2
3
4
5
Scale – cm.

FIGURE 14
(For legend, see opposite page.)

"slender rods of ground slate, usually hexagonal or octagonal in form" (ibid., p. 57), or those that are oval or circular in section and have been described as slate "awls." No sharp distinction can be drawn between these forms which appear to be variants of one fundamental type.

Even though the Yakutat specimens are either broken or unfinished, we can see their similarity to the numerous Chugach points. The latter range from 7 to 27 cm. in length, and appear to have been a specialized type of weapon point, intended to snap off in the wound, and probably used in hunting sea mammals. The smallest may have been for arrows. They are more common in the earlier than in the later prehistoric period (de Laguna, 1956, pp. 159 ff.). They are not numerous on Kachemak Bay, although the forms are similar; they appear only in Periods sub-III and III. Slate blades like pencils, mostly cylindrical in shape and ranging in length from 8 to 14.5 cm., are common on Kodiak, especially in the lower levels (Heizer, 1956, pl. 47, *a–c*, *h–j*, also types IX and X, pp. 49 f.). The modern Kodiak blades for whaling lances are very like long slender bayonets, from 13.3 to 41.2 cm. long. Presumably archeological whaling lances had similar points, and Heizer suggests that the smallest slate specimens were arrowheads.

"Slate pencils" have been recorded from the Haida, Tsimshian, Bella Coola, and Gulf of Georgia areas, including Marpole (Eburne) on the Fraser Delta (Drucker, 1943, p. 122), while the heavier "bayonet" points appear in archeological collections from the Tlingit and Coast Salish areas, for example, among the numerous slate types at Whalen Farm II (Borden, 1950, p. 16). Similar slender faceted points, but made of bone, are found at Cattle Point (King, 1950, fig. 13, *18*, *19*). In most of these areas where such slate points are found, analogous forms also occur in bone.

BARBED SLATE BLADE

The butt end of a slate point with tang and small barbs (fig. 14, *i*) was found in the bottom of the midden at Diyaguna'ᴇt. The barbs

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Figure 14.—Ground slate blades for weapons or knives. Drawn by Donald F. McGeein. *a*, Small blade for arrow or knife, associated with basketry fragments, from just above floor of Storage House, Old Town II (No. 144); *b*, fragment of large double-edged blade for lance or knife, from Subsurface Pit 38 and Mound B, lower levels, Old Town II (No. 369/430); *c*, fragment of large double-edged blade for lance or knife, from Mound B, upper levels, Old Town III (No. 544); *d*, blade for arrow, from Mound B, level unknown, Old Town II or III (No. 7); *e*, blade for arrow, from Mound B, upper levels, Old Town III (No. 149); *f*, unfinished blade, sawed slate, from Mound D, upper levels, Old Town I (No. 881); *g*, blade for arrow, from fill of House Pit 7, Old Town I (No. 770/776); *h*, butt end of blade for lance (?), from Mound D, Old Town I (No. 916); *i*, butt end of barbed slate weapon blade, from Diyaguna'ᴇt (49-25-107).

are so small as to be ineffectual; the cross section is lenticular. The specimen is now (6.2) cm. long, but was probably twice that when complete, and is 2 cm. wide and 1.6 cm. thick. It may have been the blade for a small lance (for sea mammals?) or for an arrow, since bilaterally barbed arrowheads were mentioned by some of our informants.

Barbed slate blades appear in Kachemak Bay II and in the early prehistoric period on Prince William Sound, but become popular only in later prehistoric times in these areas. They are numerous in both upper and lower levels at Uyak Bay, Kodiak, but are absent from the Aleutians where slate blades of any kind are rare (de Laguna, 1947, p. 175; 1956, p. 153 ff., 270; Heizer, 1956, pp. 49 f., especially type V). Although a few barbed slate blades are known from the Coast Salish area, they seem to be otherwise absent from the Northwest Coast. The center of their development was evidently among the Pacific Eskimo.

CHIPPED STONE WEAPON BLADES

Two chipped triangular or leaf-shaped blades of slaty green chert (fig. 11, *a*, *b*), from Old Town III and Old Town II, measure 5.4 by 2.2 cm., and 6.9 by 2.8 cm. They were double-edged blades for weapons or knives. A triangular blade of slaked schist (fig. 11, *g*), 10.2 by 5.9 cm., is from Old Town III.

The last is rather similar to chipped triangular slate blades from Prince William Sound (de Laguna, 1956, pls. 28, *10*, 29, *10*, p. 131), although the latter are smaller, and were probably for arrows or darts. Blades of chipped metamorphic slate were common in Kachemak Bay, especially in Period II. They ranged in size from 4 by 1.2 cm. to 11.5 by 6.5 cm., and were leaf shaped, narrowing to a straight base or rudimentary tang. One specimen (de Laguna, 1934, p. 69, pl. 30, *8*) is quite similar to the Yakutat blades. Although longer and more slender leaf-shaped chipped blades for lances, spears, and knives are common, especially from the lower levels at Uyak Bay, Kodiak, there are four triangular specimens of basalt and slate that are almost identical with the Yakutat blades (Heizer, 1956, pl. 36, *d–g*, pp. 47 f.).

It is impossible to compare the Yakutat specimens with chipped blades from the Northwest Coast, especially from the southern part where such artifacts are numerous, because the materials used are different. Adequate comparisons cannot be based upon outlines of the shapes alone, but must involve sizes, thicknesses, methods of flaking and degrees of skill exhibited (M. W. Smith, 1950, pp. 17 ff.). We can only mention, therefore, that Drucker (1943, pp. 41 f., 122) records occasional archeological chipped stone points from Tlingit, Haida, Tsimshian, and Bella Coola territories (but not otherwise on the central Northwest Coast), and from the Coast Salish area. There are apparently leaf-shaped and triangular forms, and basalt and slate were the materials most commonly used. On the southern Northwest Coast, chipped blades and points are of great antiquity (M. W. Smith, 1950, pp. 17 ff., 35; King, 1950, pp. 13 ff.; Borden, 1962).

HARPOONS

BARBED HARPOON HEADS WITH TANG

Detachable barbed heads with tang from the Yakutat area have been divided into two groups on the basis of size. The larger, over 10 cm. in length, were identified by informants as heads for harpoons used in taking seal, porpoise, sea lion, and salmon; smaller heads, under 6.5 cm., were arrowheads for sea otter. Although our informants had vague traditions about a two-piece socketed toggle harpoon head (for fish?) and were familiar with its Tlingit name (cf. de Laguna, 1960, pp. 111, 112, pl. 8, *b*, *c*), they had never seen any and we found no archeological examples.

Heads with tang traditionally had three (or four) barbs on one edge, but none of our archeological examples had more than two, although some specimens had probably been reshaped after a break. A few heads for seal or salmon harpoons are still being made of iron files (fig. 13, *e*) or commercial copper. They are from 15 to 25 cm. long, with two to four barbs, and may or may not have a line hole. The tang is set directly in the end of a 10- to 12-foot shaft, preferably of cedar, because this floats better than spruce. The fore-end of the shaft is wrapped with cord or wire to prevent the socket from splitting. The line from the barbed head is usually hitched around the fore-end of the shaft and brought down near the butt, where it is again hitched. The salmon harpoon is thrust, and the line is made fast to the shaft which has a plain butt. The harpoon used for sea mammals is thrown, usually from the canoe, with the left hand holding the middle of the shaft and the forefinger of the right hand resting in a groove across the expanded and flattened butt. The end of the harpoon line was formerly tied to a sealskin float, or might be held in the hand, but in either case was so attached to the shaft that the latter would float away when the game was struck. Now seals are shot with rifles, and the harpoon, if used at all, is employed like a gaff hook to retrieve the carcass. None of our informants had heard of a throwing board. Although Niblack (1890, pl. xxvii, fig. 127, *a*, *b*) illustrates a throwing board from Sitka, he reports that "The Tlingit are not known to have used the throwing-stick . . . ." When hunting sea mammals in the open water, the Yakutat people used the small canoe with forked prow (Birket-Smith and de Laguna, 1938, pl. 11, *8;* Grinnell, 1901, pp.

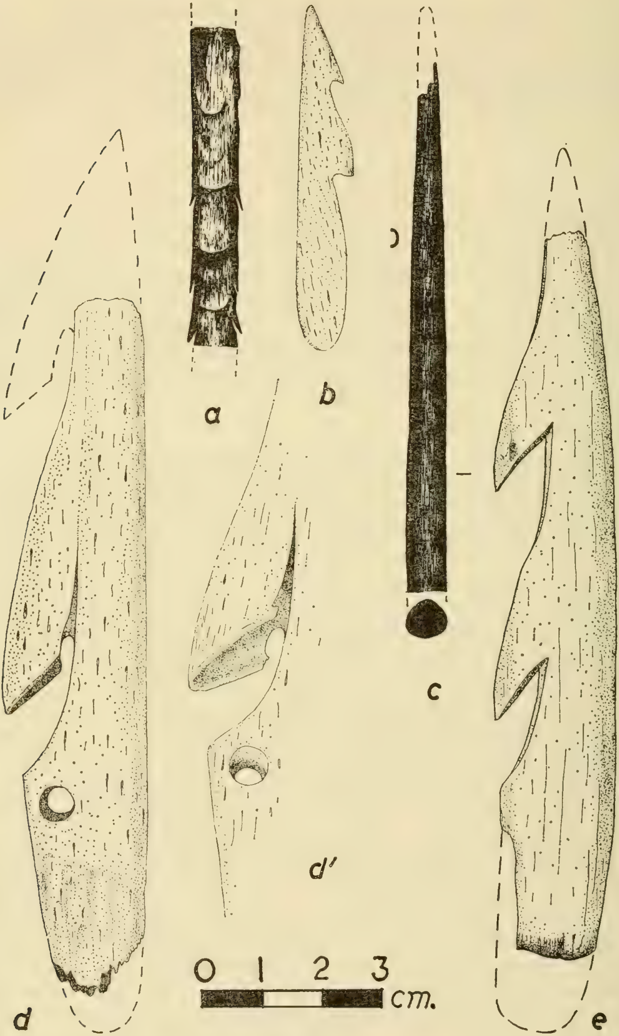
a
b
c
d
d′
e
0 1 2 3
cm.

FIGURE 15
(For legend, see opposite page.)

161 f.); for sealing among the ice floes in Disenchantment and Icy Bays they used a special type of small canoe with a heavy, spoon-shaped prow armed with a projecting post to push away the ice.

Six complete or nearly complete barbed harpoon heads were found, as well as six fragments. These bone specimens are about 11 or 12 cm. long, although some now broken probably measured as much as 15 or 16 cm. If a barb were broken off, or if the point or tang were damaged, it seems to have been the practice to smooth over the break, so that the head could be used again (pl. 13, *m*). The proveniences of these 12 specimens, including the fragments, are: 3 heads and 4 fragments from Old Town III (fig. 15, *e*, pl. 13, *m*), 2 heads and 2 fragments from Old Town II (pl. 13, *i–l*), and 1 head (fig. 15, *d*, *d'*) from Old Town I. The last and oldest specimen is interesting in that the single remaining barb is hollowed out on the undersurface. This peculiar feature is represented on three heads from the younger prehistoric period on Prince William Sound and is encountered occasionally on Kodiak and Aleut specimens, but seems to be relatively late in southwestern Alaska (de Laguna, 1956, pl. 33, *9*, *16*, p. 165). It is also found on two specimens illustrated by Drucker (1943, fig. 3, *h*, *k*) from the Northwest Coast, but without specific provenience.

Barbed tanged harpoon heads are very ancient in Aleut and Pacific Eskimo culture, in contrast to other Eskimo groups among whom the toggle head with socket was always more important. Tanged heads are present in Kachemak Bay I, and become more common in Period III than socketed harpoon heads; they outnumber the latter in both lower and upper levels at Uyak Bay on Kodiak, and were used almost exclusively in all known periods of Chugach culture (de Laguna, 1947, p. 199; 1956, pp. 164 ff.; Birket-Smith, 1953, pp. 180 ff.; Heizer, 1956, pp. 57 ff.).

All of the detachable barbed heads from the Yakutat area, ancient and modern, are of the same fundamental type, with one to four barbs along one edge, a rounded wedge-shaped tang, and (except for some harpoon arrowheads, see below) have the line hole placed asymmetrically on the tang so that it is nearer the barbed edge. This is the type used by the Copper River Eyak (Birket-Smith and de Laguna, 1938, pl. 13, *1*, *2*, *5–7*), and is the dominant style on Kachemak Bay and Prince William Sound. While it also occurs in the following

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FIGURE 15.—Barbed heads and wooden pin. Drawn by Donald F. McGeein. *a*, Fragment of barbed wooden arrow, from just above floor of House 9, Old Town III (No. 973); *b*, bone arrowhead for sea otter harpoon, from fill of House 8, Old Town II (No. 740); *c*, wooden pin, from Mound A, lower levels, Old Town III (No. 387); *d*, barbed bone harpoon head, from Mound D, upper levels, Old Town I (No. 901); *d'*, detail of *d*, slightly enlarged, to show hollowed barb; *e*, barbed bone harpoon head, from Mound A, upper levels, Old Town III (No. 414).

adjacent regions, the most popular forms on Kodiak, the Aleutians, and Bristol Bay are bilaterally barbed with a shouldered, unpierced tang (de Laguna, 1956, p. 269).

Heads of the Yakutat style are like Drucker's types IV and V and plain type II (Drucker, 1943, fig. 3, *g*, *n*, *m*, pp. 36 ff.). The shorter heads (types II and IV) are especially characteristic of the Tlingit, although they are also found among the Haida and Tsimshian. The longer, "simple unspecialized form" (type V) is recorded from the Tlingit, Tsimshian, and sites in the Coast Salish area. The historic Tlingit of Daxatkanada near Angoon evidently relied heavily upon the tanged harpoon head, most of which were probably rather short (de Laguna, 1960, p. 112, pl. 8, *h–n*, probably *d–g*). On the southern Northwest Coast, however, most detachable barbed heads have a pair of projections above the tang that serve as guards to hold the line (Drucker's type I). Such heads are characteristic of Point Gray and Marpole (Eburne), and Borden (1950, pp. 14, 18; 1951, p. 45; 1962) believes that they are among the elements derived from the interior and has hazarded that the coastal sites where they occur are probably more recent than those with only one-piece and two-piece socketed heads. (Recent radiocarbon dates may have modified this last interpretation; cf. Borden, 1962.) Certainly a specimen from Locarno Beach I (Borden, 1951, pl. I, *5*) appears from the photograph to be a detachable barbed head without line hole or guards. The line could have been tied to it, as we believe was the case with some Yakutat harpoon arrowheads (see below), and with a few harpoon heads from Kodiak (Heizer, 1956, pl. 56, *c*, *e*, *i*). Osborne, Caldwell, and Crabtree (1956, pp. 118 f.) have questioned the inland derivation of the tanged harpoon head, in view of its wide and ancient occurrence in both inland and coastal sites, pointing out that the origin of the line guard (which, incidentally, is ancient in Laughlin's site at Nikolski on the Aleutians) should be considered apart from the origin of the general type of barbed, tanged harpoon head as a whole. Although the sequence of barbed and socketed harpoon heads on the southern Northwest Coast is still puzzling, the detachable barbed head in this area need not be attributed specifically to the interior, in view of its great antiquity in southwestern Alaska, and it is probably very old also on the northern Northwest Coast. It can be described as "Eskimoid" with as great justice as can the socketed toggle harpoon heads. In fact, the lateral line guards characteristic of southern British Columbia barbed heads are rather similar to the shoulders on the most common type of head on Kodiak, the Aleutians, and Bristol Bay. These devices for holding the line may be related or parallel developments and it may be premature to postulate which areas yield the most ancient examples.

HARPOON ARROWHEADS

Nine bone heads for sea otter harpoon arrows were found. These are like the detachable barbed heads for seal and fish harpoons except that they are smaller, and some seem to lack the line hole, perhaps because the line was tied around the head below the lowest barb and above the bulge of the tang. We cannot be sure, however, that these unpierced specimens were finished. The archeological specimens were identified by our informants, who reported that such heads were also made of copper, although they disagreed as to whether there were any of iron. The harpoon arrow was described as a shaft about 4 feet long, preferably of cedar, with three split eagle tail feathers at the butt. At the fore-end was a socket piece of whalebone into which the tang of the barbed head was inserted. This part was described as "a little bone ring, split in two," that is, made in two parts, and about as long as the thumb (5 cm.?). It had a hole at one end for the shaft and a socket at the other for the barbed head. Another informant described the socket piece as like the cap of a fountain pen, presumably made in one piece. Probably several different styles were used (see below). The function of the piece was to add weight to the fore-end so the arrow would shoot straight, and also so that it would float vertically in the water with the feathered butt projecting above the surface after the quarry had been struck and the barbed head detached. The harpoon line was of twisted or braided porpoise sinew. It was divided, with both ends of the martingale attached to the shaft, one near the fore-end, the other near the butt.

Hunting of sea otters was carried out by the surround method, using fleets of small forked-prow canoes. The chief directed the hunt and established rules intended to give each man an equal chance of obtaining the valuable skins.

The complete archeological heads for harpoon arrows (pl. 13, *a–c*, *g*, *h*) range in length from about 5 to 6.3 cm., in width from 0.8 to 1 cm., and in thickness from 0.2 to 0.4 cm. One broken specimen (pl. 13, *e*) when complete may have been only 3 or 4 cm. long and 0.6 cm. wide. It evidently had only two barbs. This specimen is from Old Town II and is one of the four heads that have, or were intended to have, drilled line holes. The largest of these (pl. 13, *a*), from Old Town III, has three barbs, and the others are two heads from Old Town II, with two barbs (pl. 13, *b*), and with four barbs (pl. 13, *c*). On the last, the line hole is only partially drilled.

Three other heads lack the line hole, but may be unfinished. One with two barbs (pl. 13, *h*) is from Old Town III; a second from the same level (pl. 13, *g*) is made of bird bone and has four poorly defined barbs. The last (fig. 15, *b*) is from Old Town II and has two barbs.

Two fragmentary heads from Old Town II (pl. 13, *d*) and III (pl. 13, *f*) are probably also for harpoon arrows. There is also a tang from Old Town II, presumably broken from a similar head. It differs only in being set off by a slight shoulder.

Harpoon arrows, especially for sea otter, are characteristic of the Aleut, Pacific Eskimo, Bering Strait Eskimo, Tanaina, and Eyak. The Ingalik Tena used the same type for land otter, beaver, and large fish (Osgood, 1940, pp. 203 ff.). Although all his Northwest Coast informants denied to Drucker (1950, p. 234) that the harpoon arrow was aboriginal, presumably modern examples have been reported from the Tlingit, Tsimshian, and Kwakiutl (Birket-Smith and de Laguna, 1938, p. 432). Small barbed heads, which I interpreted as harpoon arrowheads, were found in Kachemak Bay I, although Birket-Smith (1953, p. 218) warns us that "size alone is not decisive, for from Kodiak we have sea-otter harpoons with heads which are in no way bigger than those intended for harpoon arrows," and he suggests that the latter may be a relatively late invention. I believe that it originated in prehistoric times in the Aleut-Pacific Eskimo area and did not spread to the Northwest Coast southeast of Yakutat until the great days of the fur trade. Here it is closely associated with the surround method of hunting sea otter, a technique known in modern times from the Tlingit, Haida, Clayoquot Nootka, and Kwakiutl. Drucker (1950, Trait 184, p. 243) suggests that "it may have been an historic innovation over a wider part of the coast than the entries here show." It was probably introduced among the Northwest Coast tribes by the Russians and their Aleut and Pacific Eskimo hunters. On the other hand, I would expect it to have been long practiced at Yakutat.

Drucker's identification of detachable barbed heads (type IV), "usually under 5 inches long," from the Tlingit and Haida as harpoon arrowheads (Drucker, 1943, p. 37), is, therefore, suspect, especially since most of them must have been considerably longer than Aleut and Pacific Eskimo specimens. No small barbed heads suggestive of harpoon arrows were found at Tlingit sites in the Angoon area, even at the early historic site at Daxatkanada where sea otter bones were more numerous than those of any other animal. Our Angoon informants, in describing the surround, said that sea otters were shot with ordinary unbarbed arrows, of the same type employed for land animals. Although the heads were detachable, the arrows were not harpoons (de Laguna, 1960, p. 112). Drucker's (1950, Traits 181, 182) informants among the Tlingit, Haida, and Nootka also reported that sea otters were shot with an ordinary arrow, although they were more commonly taken with the sealing harpoon.

The evidence would thus indicate that the sea otter harpoon arrow was not known on the Northwest Coast in prehistoric times, but that it was probably much older in southwestern Alaska and the Yakutat area.

SOCKET PIECES

A bone socket piece was used with the harpoon arrow. It will be remembered that informants described this as "a little bone ring, split in two," or as similar to the cap of a fountain pen. A cylindrical piece of whalebone from Old Town II was tentatively identified by one informant as a socket piece of this second type. It is broken at both ends, but one is narrowed as if to provide a place for a lashing. The fragment is now (5.1) cm. long, and 1.9 by 1.2 cm. in diameter. Sketches of socket pieces made by different informants indicated that the diameter was greater than that of the arrow shaft, but the lengths were very different, so we may infer that several different styles were used. These probably included types made in two parts as well as in one piece.

The finest piece of carving in the collection (see fig. 20, *d*) is a bone object shaped like an animal's head, found in Old Town II. It is 7.7 cm. long, 2.2 by 1.8 cm. in diameter. The bill or mouth is open and a hole has been drilled down the gullet and out the back of the head. The rear end is bifurcated to form two flattened tangs, one of which is broken. The other is incised with three compass-drawn dots-and-circles, and the pupil of the eye is represented by the same design. The head was evidently hafted onto the wedge-shaped end of a shaft.

Although the natives did not recognize the function of this piece, but assumed it to have been part of a shaman's outfit, it may have been the socket piece for a harpoon. The open mouth would have formed the oval socket to accommodate the wedged tang of a barbed head. We should note, however, that the socket piece is not used on modern harpoons with barbed tanged heads, although it may have been in the past. However, this specimen is not unlike in size the specimen tentatively identified as part of a harpoon arrow. It may indicate, therefore, that the socket piece, made in one piece with bifurcated tang, was known at Yakutat.

This type of socket piece was represented by fragments from Kachemak Bay III (de Laguna, 1934, pl. 41, *13*), was more common in the upper than the lower levels at Uyak Bay on Kodiak (Heizer, 1956, p. 55, type Ib), and was the dominant type throughout the prehistoric periods on Prince William Sound. However, only on

Chugach specimens do we find the slit socket, corresponding to the open mouth on the Yakutat carving (de Laguna, 1956, pp. 174 ff.). The short socket piece made in two parts, also mentioned by our Yakutat informants, was apparently the earliest or one of the earliest forms in southwestern Alaska, while the one-piece form diffused somewhat later from the north (de Laguna, 1934, pp. 130, 195; Birket-Smith, 1953, pp. 180 ff.). The most modern socket piece for sea otter harpoon arrows used by the Aleut and Pacific Eskimo is a very long, heavy, one-piece device, again quite different in style from either the prehistoric Chugach or Yakutat specimens. (However, see Heizer, 1956, pp. 55 f., for a somewhat different interpretation.) Among both prehistoric and modern northern Alaskan Eskimo we occasionally find socket pieces for harpoons that are carved to represent an animal's head with open mouth. The Yakutat specimen in this respect has a very Eskimo appearance.

BOWS AND ARROWS

The bow was used in hunting land animals, birds, and sea otter. It was described as made of hard, springy, hemlock wood, about 3 or 4 inches in diameter, and perhaps 4 to 4½ feet long. It lacked both the sinew backing of the Eskimo and the projecting wooden device to catch the bowstring found on Athabaskan bows. In the middle, the bow was narrowed for a grip, where the first and second fingers of the left hand steadied and aimed the arrow. Such bows are illustrated by Niblack (1890, pl. xxvi, figs. 109, 110 Yakutat; 112 Sitka). The bowstring was reported to be of braided porpoise sinew.

According to our informants, all arrows had a feathered shaft like that already described for the harpoon arrow (p. 135). Arrowheads of all types were said to have been detachable from the shaft, although only the head for the sea otter arrow had a line for retrieving the quarry. When a land animal was shot, the hunter simply picked up the arrowshaft and fitted it with a new head from a supply which he carried in a bag slung under his left arm. Tlingit informants at Angoon (de Laguna, 1960, p. 114) also said that their unbarbed arrowheads were detachable, and we suspect that this feature was more common on the Northwest Coast than has been specifically reported. It would lessen the danger of breaking the shaft, or of jerking the head from the wound and so cause external bleeding, likely to frighten the animal into flight. Drucker (1943, p. 41, cf. type BII points) mentions that Northwest Coast informants "tell of arrow points which detached from the shaft, and 'worked around' in the quarry's body," although he suspects that this description applies to a special type of weapon point not found at Angoon or Yakutat.

Although our informants mentioned wooden arrows with enlarged blunt ends (cf. Niblack, 1890, pl. XXVII, fig. 126), used for practicing or for stunning birds, we found no examples of these in wood or in bone. A variety of bone forms were made by the Tlingit (Niblack, 1890, fig. 126, *a–c*).

WOODEN FRAGMENTS

From House 9 in Old Town III there are fragments of wooden rods, 1 and 0.8 cm. in diameter, (15) and (6.3) cm. long, which may be pieces of arrowshafts.

In the same house was a broken wooden object (fig. 16, *b*), now (21) cm. long, 2 cm. wide, and 1.2 cm. thick. Lateral notches near the unbroken end suggest that it may have been a poorly made toy bow. The constriction at the broken end would, in this case, represent the grip in the center of the bow, and the complete specimen would have been about 50 cm. long.

ARROWHEADS

About fifty-odd specimens were probably arrowheads. Of these, 5 were of copper, 1 of iron, 10 or 11 of slate, 23 of barbed bone, 3 of barbed wood, and about 12 of unbarbed bone. Identification of some is uncertain, since they may have been points for light lances or have served other purposes. In addition, there are other amorphous bone points which may have been arrowheads. The three slender slate points and the barbed slate point (pp. 127, 129 f.), classed as heads for lances, may have been for arrows. One of our informants described chipped stone arrowheads with serrated or finely barbed edges; we found nothing of this kind.

SLATE ARROWHEADS

Three broken slate blades (fig. 14, *e*, *g*), with tangs but without barbs, were probably arrowheads, to judge by their size. The most complete specimen, represented by fragments from Old Town I (fig. 14, *g*), is 1.5 cm. wide and 0.2 cm. thick, and was originally about 6.5 cm. long. It has a faceted point and sloping shoulders. From Old Town III is a fragment of a presumably similar blade, and a poorly made specimen (fig. 14, *e*) with a tang, now broken off. Three bone arrowheads of the same shape (pl. 15, *u–w*) are from Old Town I and II (see p. 146).

More numerous were small, rather slender leaf-shaped slate points, without tangs or barbs, which could have served as blades for arrows or harpoons (fig. 14, *d*). There are 7 (or 8) of these, ranging in length from 2.8 to 5.6 cm., in width from 1.1 to 1.5 cm., and in thickness from 0.2 to 0.3 cm. Some are hardly more than slate splinters which have been ground on the edges to produce a sharp

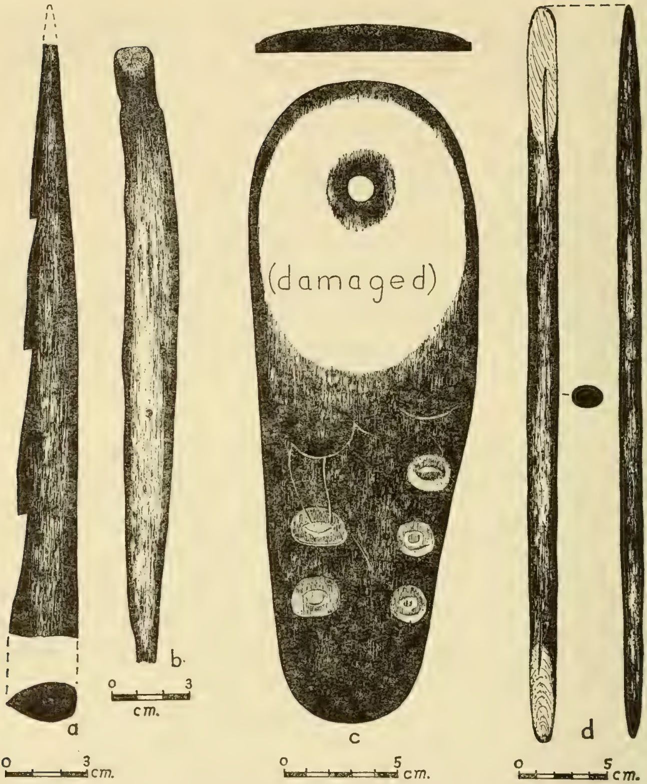

FIGURE 16.—Wooden objects. Drawn by Donald F. McGeein. *a*, Fragment of barbed spear, from just above floor of Storage House, Old Town II (No. 127); *b*, fragment of toy bow (?), from floor of House 9, Old Town III (No. 657); *c*, decorated slab, from Mound B, upper levels, Old Town III (No. 600); *d*, rod scarfed at both ends (for spreading fish ?), from floor of Storage House, Old Town II (No. 417).

point. Two specimens, including the smallest, were identified by informants as detachable arrowheads for bears or mountain goats. One blade, associated with basketry fragments in the Storage House, may have been for an arrow or for a knife (fig. 14, *a*). The proveniences of these slate points are: 1 from Old Town III, 2 from Old Town II, 4 from Old Town I, and 1 from unknown level.

These rather crude specimens remind us of the small leaf-shaped or triangular slate blades from Kachemak Bay III and late prehistoric Chugach sites with sharp points but dull edges (de Laguna, 1934, pl. 32, *12;* 1956, pls. 28, *9*, 29, *8*, p. 155). Three somewhat similar blades were found at Cattle Point (King, 1950, fig. 11, *9*, *10*), but it is uncertain whether these constitute a definite type.

COPPER ARROWHEADS

Five copper arrowheads were found at Old Town and a similar specimen of iron came from Shallow Water Town on Little Lost River. These all have leaf-shaped blades that are thickest in midsection, sloping shoulders, and narrow pointed tangs. The latter are square or rectangular in cross section and differ greatly in length.

One specimen with very long stem is from Old Town II (pl. 14, *a*). The total length is 15.6 cm. although the blade itself is only 5 cm. long. Along the medial ridge on each surface a line of triangular dots has been stamped, perhaps as an owner's mark. Another long-stemmed head (pl. 14, *c*) is from Old Town III, and measures 9.8 by 1.9 cm.

Three specimens with short tangs (pl. 14, *b*, *d*, *e*) range in length from 6.4 to 7.2 cm., in width from 1.5 to 1.7 cm., and in thickness from 0.2 to 0.3 cm. Two are from Old Town III, the third from Old Town II. The stem of the last has been wound with two-ply S-twist sinew (?) thread, probably to make it fit more snugly into the socket of the arrowshaft.

A fragment of copper from Old Town III may have been intended for a small arrowhead.

There are also five copper pins, rectangular in cross section, which resemble stems for arrowheads, although identification is impossible. Three (pl. 14, *g*, *i*) are from Old Town III, and one from Old Town I (pl. 14, *f*). The longest of all (pl. 14, *j*), measuring 9.1 cm., is from Old Town II, and while similar to the long stem on the arrowhead from the same part of the site (pl. 14, *a*), it may have been an awl, since it was found with some (mountain goat?) wool.

The copper arrowheads from Old Town are not unlike late prehistoric Chugach specimens, heads from Dixthada near Tanacross on the upper Tanana, and from presumably Tutchone sites in southwestern Yukon Territory, although each area has its own local style (de Laguna, 1956, pl. 36, *19*, pl. 37, *10;* Rainey, 1939, fig. 3, *10*, *12*, *14;* MacNeish, 1960, pl. VI, *4*, *5*). Copper arrowheads are reported on the Northwest Coast only from the Chilkat Tlingit (Drucker, 1950, Trait 506), a group that maintained close trade contacts with the interior Athabaskans from whom most of the native copper on the coast was obtained.

BARBED BONE ARROWHEADS

There are 12 unilaterally barbed bone points for arrows (2 of which might be for multipronged arrows), 6 fragments of presumably similar heads, and 5 very small barbed points which might have been for fishhooks. Since slender unilaterally barbed bone or antler points are common and ancient among the northern and southwestern Alaskan Eskimo and the Aleut, and are also found on the northern and southern Northwest Coast, appearing at such ancient sites as Cattle Point, Marpole (Eburne), Beach Grove, and Locarno Beach (de Laguna, 1947, pp. 203 ff.; Drucker, 1943, type AI, pp. 41, 120; King, 1950, fig. 13, *32–35;* Borden, personal communication), their presence at Yakutat could have been predicted. Our informants also mentioned a type of arrowhead with one (or two?) pairs of barbs, probably like the long-tanged bone and iron specimens from the Eyak (Birket-Smith and de Laguna, 1938, pp. 103 ff., pl.12, *4–8*), but we found no examples.

There are three complete slender barbed points with more or less detached conical tangs, and a pair of incised lines or grooves outlining the row of four or five barbs, and a flat bladelike tip. These are 21.2, 22, and 25 cm. long, and about 1.5 cm. wide and 0.7 cm. thick. The longest and most interesting specimen (fig. 17, *o*) has a scalloped edge below the row of five barbs, and the bordering lines are spurred. This specimen comes from Old Town II. The other two are from Old Town III; one with four barbs, the other (fig.17, *m*) with five barbs and a medial line on each side, in addition to the bordering lines along the barbs. Informants who saw this last specimen doubted that their ancestors had used such arrowheads, and one man hazarded that it might have been Chugach.

Fragments of what were probably similar heads are the basal part with conical tang from Old Town II (fig. 17, *e*), a midportion with bordering lines and two barbs from Old Town III, and a long fore-end like a blade from Old Town III (fig. 17, *f*).

There is also a slender point (fig. 17, *n*), 14 cm. long and 1 cm. wide, with long conical tang, and a small shoulder or notch below the two barbs. It lacks bordering lines, however, and comes from Old Town II.

These seven specimens resemble in a number of ways some of the slender barbed points from Kachemak Bay, Kodiak, and Prince William Sound. It is interesting that one man should ascribe them to the Chugach, for they have a definitely Eskimoid appearance, even though their particular combination of features is not duplicated on southwestern Alaskan specimens. Thus, the flat tip like a blade is characteristic of the Chugach barbed arrowheads, although these are much smaller, and it is also found on protohistoric and modern heads of the Tena and some northern Alaskan Eskimo (de Laguna, 1947, pp. 205 f.; 1956, p. 179). The detached conical tang is old among the Eskimo although it was never as popular as the plain conical tang. Both forms occur on Prince William Sound and Kodiak, but not on Kachemak Bay (de Laguna, 1947, p. 205; 1956, pl. 36; Heizer, 1956, figs. 43 and 44). Lines bordering the row of barbs are typical of points from Kachemak Bay of all periods, and of Kodiak, and also are found in Prince William Sound, and in the Angoon area (de Laguna, 1947, p. 207; 1956, pl. 36, *23*, *24*, pl. 37, *1;* 1960, pl. 8, *a;* Heizer, 1956, pl. 61). MacNeish (1960, p. 41, pl. VI, *8*) illustrates a slender antler point with six barbs on one side, prismatic section, bordering and medial lines, and plain conical tang. "Points similar to these are found throughout Athabascan territory in late prehistoric and early historic time periods." But it is not certain whether this observation applies to all the stylistic features.

Six slender barbed arrowheads (fig. 17, *c*, *d*, *g–i*, *k*) have flattened and rounded or roughly squared off bases, not detached tangs. They lack bordering lines, and were apparently from 12 to 22 cm. long when complete, with up to four or five barbs. They appear to represent a careless (?) divergence from the pattern characteristic of southwestern Alaskan points, although a similar specimen was found on Prince William Sound (de Laguna, 1956, pl. 37, *3*). Of these, one is a broken specimen from Old Town III, four heads and three fragments of presumably similar specimens are from Old Town II, and one complete head is from Old Town I.

Two damaged specimens (fig. 17, *b*, *l*) were found together in Subsurface Pit 38 below the Storage House in Old Town II, and are similar to the points just described except that they are rather curved. This suggests that they may have been points for multipronged arrows or spears (leisters). The longer of the two was probably 17 cm. long when complete, with four small barbs on the inner edge of the curved shaft. The base is also cut on a curve. The other, probably 14.5 cm. long when complete, has three barbs on the slightly convex edge, and is more nearly straight than the first.

Identification of these is very uncertain, since the Copper River Eyak and Chugach denied the use of multipronged darts or arrows (Birket-Smith and de Laguna, 1938, pp. 112 ff.; Birket-Smith, 1953, p. 38). However, one barbed point for such a weapon was found on Prince William Sound and another on Cook Inlet, and this type of weapon was well represented archeologically on Kodiak, the Aleutians, and in northern Alaska (de Laguna, 1934, pl. 42, *23*, p. 193; 1956, pl. 36, *25*; Heizer, 1956, pl. 60). The multipointed arrow has also been reported from the central and southern Northwest Coast (Barnett, 1939, Trait 973; de Laguna, 1947, p. 206). On the northern

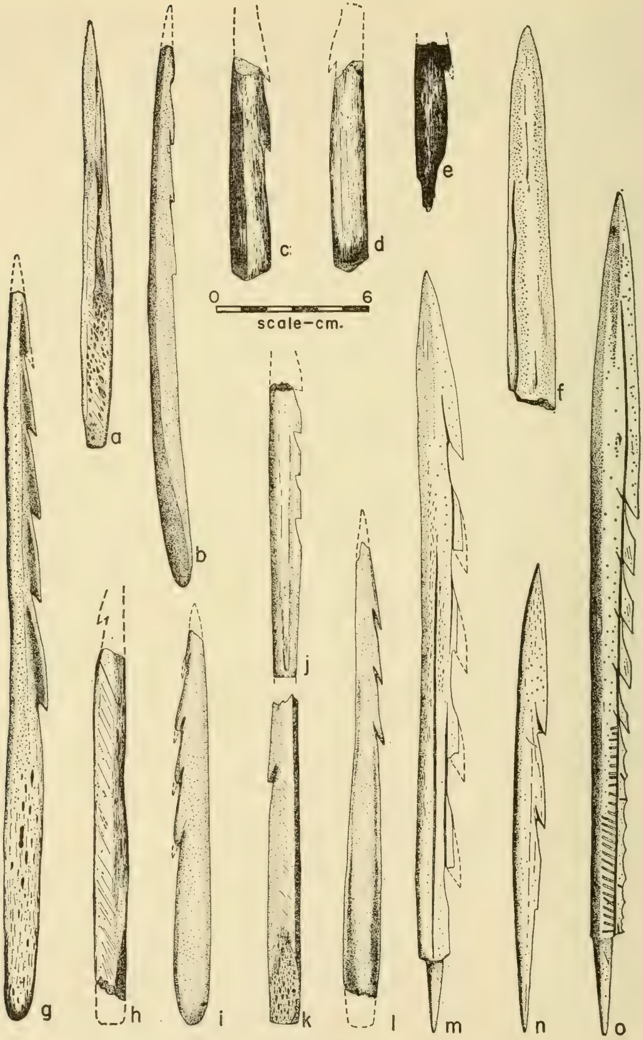
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FIGURE 17
(For legend, see opposite page.)

section, Drucker (1950, Trait 508) records it only from the Haida and the southern coastal Tsimshian, not from the Tlingit; multipointed bird spears were denied by all of Drucker's (1950, p. 234) informants on the Northwest Coast. It would thus appear that even if the multipronged arrow were used at Yakutat, it was a rare type among the mainland tribes of southwestern Alaska and the northern Northwest Coast. However, there were four examples of barbed leister side prongs in the Maritime and Late Phases at Cattle Point, and King (1950, p. 46, fig. 13, *33*) also notes similar specimens from archeological sites at Marpole (Eburne), Port Hammond, and North Saanich, as well as ethnological records of barbed multipointed spears from the Twana and Makah.

On the whole, the barbed arrowheads from Yakutat seem most similar to Chugach specimens. There were too few Tlingit examples from Angoon to permit detailed comparisons, although the one complete specimen was very similar to some Yakutat heads. None of the particular types described by Drucker (1943, pp. 39 ff., fig. 5) from the Tlingit, Haida, Tsimshian, southern Kwakiutl, and Coast Salish is sufficiently like any Yakutat specimen to suggest close resemblances, although there are some similarities in particular features. Drucker's observation that collections, especially from the northern Tlingit, contained heavy points "of obvious Eskimo or Aleut type," is equally applicable to the Yakutat material. Fixed barbed bone or antler points are, of course, well developed in the Gulf of Georgia and Fraser Delta areas, but seem to offer no close parallels in style to these northern forms.

It should be noted that we found no slender barbed bone arrowheads that were slotted or grooved to hold stone or metal blades, like those from Kachemak Bay, Kodiak, or the Tlingit (de Laguna, 1934,

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FIGURE 17.—Barbed points and arrowheads. Drawn by Donald F. McGeein. *a*, Bone arrowhead (?), from Mound B, lower levels, Old Town II (No. 291); *b*, barbed bone point for arrow (or leister), found with *l* in Subsurface Pit 38 below Storage House, Old Town II (No. 427); *c*, *d*, fragments of barbed bone points, from box in center of House 8, Old Town II (Nos. 913, 912); *e*, fragment of barbed bone arrowhead, with splitting adz (No. 40) and cut bone (No. 48), from bottom of Subsurface Pit 14, Mound B, lower levels, Old Town II (No. 47); *f*, point of barbed (?) bone arrowhead, from Mound A, upper levels, Old Town III (No. 362); *g*, barbed bone arrowhead, from Mound D, upper levels, Old Town I (No. 900); *h*, fragment of barbed bone arrowhead (?), from Mound A, upper levels, Old Town III (No. 330); *i*, barbed bone arrowhead, from Mound B, lower levels, Old Town II (No. 576); *j*, barbed wooden arrow point, from fill of House 9, Old Town III (No. 860); *k*, fragment of barbed bone arrowhead, from fill of Storage House, Old Town II (No. 234); *l*, barbed bone point for arrow (or leister), found with *b* in Subsurface Pit 38 below Storage House, Old Town II (No. 424); *m*, barbed bone arrowhead, from Mound B, upper levels, Old Town III (No. 100/290); *n*, *o*, barbed bone arrowheads, from Mound B, lower levels, Old Town II (Nos. 153, 655).

pl. 42, *12*, *13*; 1947, p. 208; Heizer, 1956, fig. 43, *g*, fig. 44, *a–d*, *f*; Niblack, 1890, pl. XXVII, figs. 112, 120). This type is also absent from the Chugach collections.

BARBED BIRD-BONE POINTS

Six barbed points of bird bone from Old Town II are so much smaller than the points identified as arrowheads that they may have been barbs for compound fishhooks. One (pl. 13, *d*), 3.4 cm. long, with two barbs and a defective base, has already been mentioned as a possible head for a sea otter harpoon arrow. Four others (pl. 15, *a–c*, *k*), 4.2 to 9.4 cm. long, have a single barb, and the last (pl. 15, *e*), now broken, has a notch like a barb. Similar specimens, equally difficult to identify, come from early prehistoric Chugach sites and from the historic Tlingit fort of Daxatkanada near Angoon (de Laguna, 1956, pl. 36, *6*, *12*, pl. 37, *5*, *8*; 1960, p. 117, pl. 9, *h*).

BARBED WOODEN POINTS

There are three fragmentary barbed points of wood. Two are very similar to the barbed bone points and may have been fore-ends of arrows or of spears. One fragment from Old Town III (fig. 17, *j*) is (8.6) cm. long, with three barbs and indications of a fourth. The second (fig. 16, *a*), from Old Town II, now (23.2) cm. long, has three barbs, and was more probably part of a spear. A fragment of a small barbed wooden shaft, (5) cm. long, and 0.9 by 0.7 cm. in diameter, also comes from Old Town III (fig. 15, *a*). It is unusual in having 3 rows of cuts that produce close-lying barbs, of which 11 are visible. This specimen could have been part of an arrow, the undercutting of the barbs perhaps designed to make the point snap off in the wound. In style of barbing it resembles a (Haida?) detachable bone harpoon head with bed for a blade (?) (Drucker, 1943, fig. 3, *l*). I know of no other comparable specimen.

Although hardwood points for small game are recorded for several tribes on the Northwest Coast: Tlingit, Haida, Tsimshian, Bella Coola, and Nootka (Drucker, 1950, Trait 507), and were mentioned by our Angoon informants (de Laguna, 1960, p. 114), such points seem to have been unbarbed. The Yakutat examples should be considered as copies of bone points.

UNBARBED BONE ARROWHEADS

Three bone arrowheads (pl. 15, *u–w*) with tang and sloping shoulders are duplicates in bone of the small tanged slate arrowheads (cf. fig. 14, *a*, *g*). One of bird bone, 5.4 cm. long and 1.3 cm. wide, is from Old Town I; a second is from Old Town II, and the largest, 7.4 by 1.3, is of split animal rib and probably also comes from Old Town II.

Of less definite shape and thus resembling some of the small slate blades (cf. fig. 14, *d*, *e*), are three specimens of split rib (pl. 15, *l–n*), 5.5 to over (6.7) cm. long, with rather dull edges and sharp points. These are also probably arrowheads. One is from Old Town III, and an additional fragment is from Old Town II.

There are four additional blades of solid bone (pl. 15, *r–t*), about 7 by 1 cm., which may have been for arrows, or possibly for small knives, since they are not very symmetrical. All are from Old Town II.

Also from the same level is a longer and more slender blade (fig. 17, *a*), 12.7 cm. long, which is almost certainly an arrowhead, since its thin, flattened, squared-off butt and sharp point resemble in style those on some of the barbed bone arrowheads. Two fragments too small to identify with certainty but which suggest similar points are from Old Town II, and one from Old Town III.

There are six flat blades or points of bird bone, with dull edges and sharp points (pl. 15, *o–q*). All are under 7 cm. in length, and, with one exception which is from Old Town II, are from Old Town III. They may have been arrowheads, although identification is uncertain.

There are other points of bird bone (pl. 15, *g–j*), animal rib, and other animal bones, which may also have been arrowheads, barbs for fishhooks, teeth for fish rakes, or parts of other implements. Identification of function is in most cases impossible. (See below.)

Unbarbed bone arrowheads are not uncommon on the Northwest Coast and in southwestern Alaska, although the lack of pronounced characteristics makes comparisons difficult. Chugach specimens tended to have flattened points like blades and were perhaps most similar to some of the Old Town examples. Cylindrical pinlike arrowheads were common on Kachemak Bay and Kodiak (de Laguna, 1956, p. 179; Heizer, 1956, pl. 54, *a–f*). Our knowledge of Northwest Coast archeology is insufficient to make detailed comparisons, but we may note that many bone points from Cattle Point in the Gulf of Georgia, some of which were probably arrowheads, approach these northern forms (King, 1950, fig. 13, *15–23*, p. 45). Large unbarbed bone points are reported ethnologically from the Tlingit to the northern Kwakiutl and Nootka (Drucker, 1950, Trait 499). Angoon informants described such arrowheads, usually about 10 cm. long, or even 15 cm. long, for bear. Although unbarbed, they were detachable (de Laguna, 1960, p. 114). The Yakutat specimens, though shorter, probably belong to the same tradition.

BONE POINTS, SHAFTS, AND COPPER PINS

In addition to the specimens described as unbarbed bone arrowheads, there are a number of miscellaneous bone points, some of which may also have been for arrows, while others were presumably awls, drills, barbs for fishhooks and fishspears, teeth for fish rakes, and so forth, even though certain identification is impossible.

BONE POINTS

Four bird bones, more or less sharpened at one end, are probably awls (pl. 16, *m–p*). They range in length from 5.2 to 9.5 cm. Three are from Old Town II, the fourth from Old Town II or III.

Similar to the above, although the bird bones are split as well as sharpened, are four specimens from Old Town II (pl. 16, *q–s*). To the latter group we may perhaps add two broken specimens from Old Town III, another from Old Town II or III, and a fourth from Old Town II.

A bird bone splinter from Old Town II, shaped like a tiny knife (pl. 16, *k*), has already been mentioned (p. 108).

There are, in addition, eight tiny points made of bird bone splinters (pl. 15, *g–j*), about 4 to 5 cm. long, with rough or broken butts. One is from Old Town I, five from Old Town II, and two from Old Town III. They may be points for weapons or fishing devices.

Seven points are made of split animal rib (pl. 16, *t–v*). These are 6.4 to 10.5 cm. long, 0.8 to 1 cm. wide, and 0.2 or 0.3 cm. thick. Two are from Old Town III, four from Old Town II, and one from an undetermined level.

Lastly, there are 13 crudely shaped or fragmentary pieces of bone with pointed ends, some evidently unfinished. Six are from Old Town III, seven from Old Town II, and one from Old Town I.

Except for the specimens (pl. 16, *m–s*) which were probably awls, it is impossible to identify the rest. Some may have been points for arrows, although the bird bone splinters are too light, and the pointed ribs too curved. It is more likely that some of these are barbs for fishhooks or teeth for fish rakes.

BONE SHAFT FRAGMENTS

There are six fragments of bone shafts. Three are from Old Town III. One of these, now measuring (17.8) cm. in length, with diameters of 2.4 by 1 cm., was apparently pointed at both ends. Two others were rectangular in cross section. One was over 7.5 cm. long when complete, pointed at one end and rounded at the other. The second specimen was similar but larger. The remaining three specimens are all from the Storage House in Old Town II. Of these, the first is (15.2) cm. long, 2.5 by 1.5 cm. in diameter, with a blunt point at one end. A shorter and more slender fragment of a shaft with oval section is bluntly rounded at the end. The third fragment has a hexagonal cross section. These broken shafts may have been parts of weapons or tools.

It is impossible to determine the functions of these points and shafts, even though similar objects have been found in southwestern and southeastern Alaska. As Drucker (1943, p. 56) writes: "Almost any collection of archeological materials from this area contains numbers of pointed bone artifacts, which may have served various purposes: hook barbs, herring rake teeth, hafted drill points, pins or skewers." The same uncertainty applies to larger shafts or fragments of rods (Drucker, 1943, p. 55).

COPPER PINS

There are two copper pins pointed at both ends from Old Town II (see fig. 18, *d*, *e*). One is 6.3 cm. long, and 0.3 cm. in section; the other 5.5 cm. long, and 0.5 by 0.2 cm. A third pin from Old Town III (see fig. 18, *i*) is pointed at one end, while the other is expanded and flattened. This is 6.8 cm. long, 0.6 cm. wide, and 0.3 cm. thick. A slender, curved and pointed piece of copper, 3.2 cm. long, also from Old Town III, may be a scrap cut from a larger sheet, partially shaped into a pin.

These double-pointed pins are not unlike a copper pin from Prince William Sound, although the latter is 12.5 cm. long, and was tentatively identified as a nose pin (de Laguna, 1956, pl. 42, *26*, p. 209). The Old Town specimens are too short and roughly finished for such a use. Like eight copper pins from the prehistoric Athabaskan site of Dixthada on the Tanana (Rainey, 1939, fig. 3, *11*), they may have been awls. Or, possibly they were parts of hooks or rakes for catching fish.

DEVICES USED IN FISHING AND TRAPPING

The Yakutat natives formerly caught salmon in large rectangular fishtraps set in weirs across such streams as the Situk and Lost Rivers. Smaller cylindrical traps were also used for salmon and eulachon. As already mentioned, the harpoon with detachable barbed head was used for taking salmon, as was a type of gaff hook with bone barb. Unfortunately, the latter is no longer clearly remembered. Halibut were caught in deep water with large hooks, made of two pieces of wood lashed together to form a V, and furnished with a sharp bone barb (cf. Niblack, 1890, pl. xxxi, figs. 155, 156). The shanks of these hooks were carved to represent men, birds, mythical creatures, and other figures. Pieces of squid were used for bait, and the hooks were anchored by heavy stones. The line was attached to a float or pair of floats made of wood carved like a sea bird, or made of an inflated seal stomach. Smaller compound V-shaped hooks were used for other fish, such as cod (Niblack, 1890, pl. xxx, figs. 147, 146, although from the Makah). Herring in open water were taken with the fish rake.

FISHHOOKS

Presumably some of the small bone points were barbs for fishhooks (pl. 15, *a–e*, *k*). Such tiny barbed points, usually grooved or notched at the base for attachment to the shank, are known archeologically from the Aleutians, Kodiak, and Kachemak Bay (all periods) (de Laguna, 1943, p. 196; 1947, p. 212; 1956, pp. 182 f.; Heizer, 1956, p. 73, type III). What is essentially the same type of hook with barbed barb was used for salmon and cod by the Nootka and Kwakiutl, and by the Chilkat for trout (Drucker, 1950, Traits 55, 57, and 57a). A hook with U-shaped shank and barbed barb (Trait 58) was used for halibut on the southern and central Northwest Coast and by some of the southern Tsimshian. A small point with three barbs from Daxatkanada near Angoon was tentatively suggested as a barb for a fishhook (de Laguna, 1960, p. 117, pl. 9, *h*).

Barbed bone points suitable for fishhooks have been found at archeological sites in Coast and Interior Salish country, although Barnett (1939) reports only unbarbed points on modern fishhooks from the Gulf of Georgia Salish.

We may assume that the fishhook with barbed bone barb is an old type on the Northwest Coast and in southwestern Alaska. The V-shaped hook, with plain barb, probably represented by some of the many small bone points found at Yakutat (pl. 15, *g–j*), from which the angular halibut hook of the northern Northwest Coast was developed, is apparently a still older and more widely distributed form (de Laguna, 1947, pp. 212 f.).

What may be an unfinished shank for a halibut hook is described under "Human Figurines" (pp. 172–175).

NOTCHED STONES

Four notched stones from Old Town may have been sinkers for fishing lines, even though the smallest seems very light for such use.

The largest, from Old Town, level unknown, is a slab of rock, 2 cm. thick, that has been roughly shaped into a disk with a diameter of 23 cm., on which three or four notches or irregularities could have held a line.

Two small flat circular pebbles have four evenly spaced notches on the rim (fig. 18, *h*). One with a diameter of 1.2 and a thickness of 0.2 cm. is from Old Town III; the second, 6 cm. in diameter and 2.5 cm. thick, is from Old Town II. An ovoid cobble from Old Town I, with a maximum diameter of 7.5 cm., has been notched on both edges near one end.

Notched stones for bolas and sinkers have already been discussed at length (de Laguna, 1934, pp. 167 ff.; 1956, p. 271). It is sufficient to mention that they are widely distributed in southwestern Alaska, although absent from Kachemak Bay I and Prince William Sound. The Chugach and Eyak both lacked the bola, and usually employed unshaped stones for sinkers (Birket-Smith and de Laguna, 1938, pp. 113, 120; Birket-Smith, 1953, p. 39). Although Drucker (1950, Traits 74 and 75, p. 239) records both grooved and unshaped sinkers from the Northwest Coast, he finds that archeological notched, grooved, and perforated stones are rare, and have not been found in collections from the Tlingit and Haida (Drucker, 1943, pp. 57, 122, 124). Most of the stones identified as sinkers from Cattle Point on San Juan Island were perforated, although a few notched forms were also found (King, 1950, pp. 36 ff., 40 ff.).

BARBS FOR GAFF HOOKS

Four bone specimens were found which may have been barbs for gaff hooks (fig. 18, *a*, *f*, *g*). It is less probable that they were side prongs for fish spears. They range in length from 6.1 to 8.4 cm., and in cross section from 0.9 by 0.6 to 1.4 by 0.9 cm. One end is pointed, the other scarfed for attachment; on the largest specimen there is a ridge or shoulder opposite the scarf to hold the lashing. This barb and two others are from Old Town III; one is from Old Town II. Possibly some of the slightly curved bone points of split rib (pl. 16, *l–n*) may have served a similar function.

Some kind of gaff hook was formerly used at Yakutat, according to our informants, and while they recognized the picture of the three-pronged fish spear used by the Chilkat (Drucker, 1950, Trait 47, fig. on p. 238), they denied its use at Yakutat. Similar statements were made by the Chugach and by the Tlingit at Angoon (de Laguna, 1960, p. 116).

Barbs somewhat similar to the Yakutat specimens have been found on Prince William Sound, Kachemak Bay, Kodiak (?), and the Aleutians (de Laguna, 1934, p. 195, pl. 43, *14*, *15;* 1956, p. 182, pl. 36, *15;* Heizer, 1956, p. 78). Some of these were undoubtedly lashed on, others had narrow butts for insertion like specimens from Daxatkanada near Angoon (de Laguna, 1960, pl. 9, *k*, *l*). It is unfortunate that we do not know for what type of spear or gaff these barbs were intended.

The fish spear (leister) with two barbed side prongs and a central prong is old in Eskimo culture and was used by a number of interior tribes in the Northwest as far south as the Columbia River, although it was of sporadic distribution on the Northwest Coast (de Laguna, 1947, p. 211; Drucker, 1950, Traits 46 and 47; Rostlund, 1952, map 35).

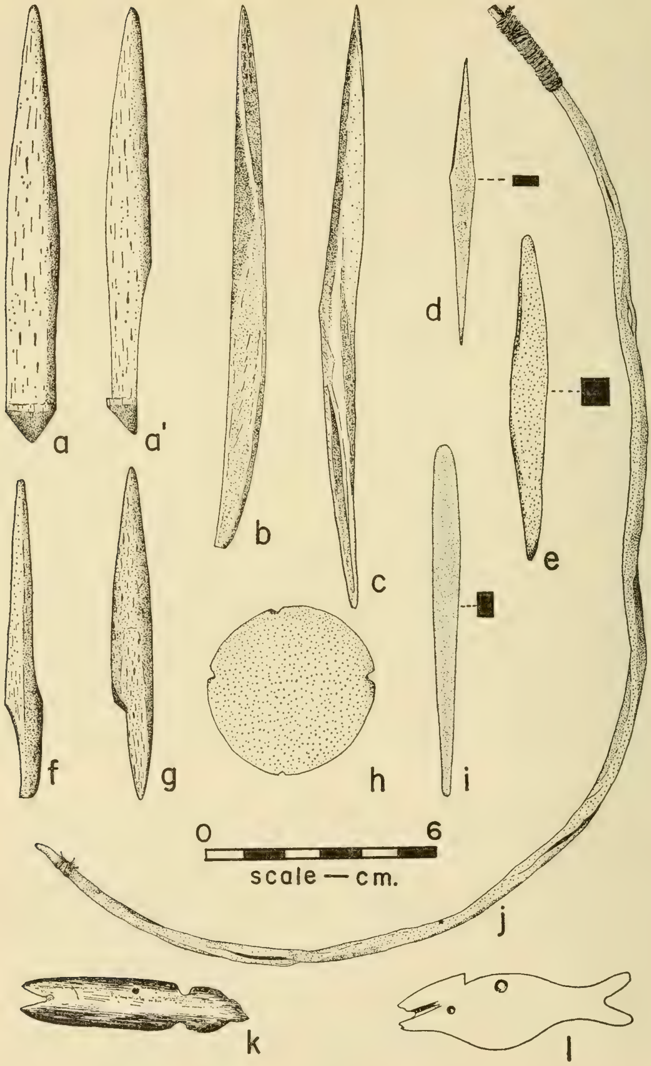
a
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FIGURE 18
(For legend, see opposite page.)

This type of spear is primarily used to catch fish in frozen lakes in winter, and would therefore not be as important among coastal tribes who relied upon stores of dried and smoked salmon, taken by the far more efficient traps and weirs.

On the other hand, Drucker (1950, Trait 49, p. 238) reports the fish gaff from a number of northern and central Northwest Coast tribes, although he "does not believe the gaff hook was an aboriginal implement on this part of the coast, nor did most informants think so." Descriptions of the gaff hook by some of our Tlingit informants do not give the same impression of such recent adoption. Birket-Smith (1953, pp. 41, 200), moreover, records the gaff from the Aleut, Chugach, and other Eskimo groups, and finds it "common throughout the Northwest Coast and far into California," ascribing to it a respectable antiquity (i.e. as "Neo-Eskimo"). We cannot, of course, be sure that Drucker and Birket-Smith are referring to exactly the same implement.

The gaff is used by the Tlingit to hook salmon by feel in muddy streams where they cannot be seen and speared. Such streams are numerous in the Yakutat area.

FISH LURES OR AMULETS

Two flat pieces of bird bone from Old Town I may have been lures or amulets (fig. 18, *k*, *l*). They are 4.5 cm. long, and 1 to 1.4 cm. wide, with the outlines of a fish. On one, the eye, mouth, fin (?), and tail are depicted, while a drilled hole served for suspension. The other only vaguely suggests a fish, with a deep notch at one end and a pair of notches at the other, representing the mouth and tail and perhaps serving for attachment of a cord.

Drucker (1950, Trait 98, *a*, *b*) reports no fish lures on the Northwest Coast, except for the very special spinner used by the Nootka which is quite different from the fish image dangled from a line. Rostlund (1952, pp. 180 f.) has summarized the distribution of the fish decoy,

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Figure 18.—Devices used in fishing and trapping. Drawn by Donald F. McGeein. *a*, Bone barb for gaff or fish spear, from Mound B, upper levels, Old Town III (No. 321); *b*, bone gorge, from Surface Pit 8, Mound B, lower levels, Old Town II (No. 111); *c*, bone gorge, from Mound B, lower levels, Old Town II (49–25–46); *d*, copper pin (tooth for fish rake?), from fill of House 8, Old Town II (No. 602); *e*, copper pin (tooth for fish rake?), from Mound B, lower levels, Old Town II (No. 877); *f*, bone barb for gaff or fish spear, from Mound B, upper levels, Old Town III (49–25–45); *g*, bone barb for gaff or fish spear, from Subsurface Pit 38 below Storage House, Old Town II (No. 432); *h*, notched pebble (sinker?), from Mound B, upper levels, Old Town III (No. 21); *i*, copper pin (tooth for fish rake?), from Mound B, upper levels, Old Town III (No. 970); *j*, copper hook (for snare ?), from fill of House Pit 1, Old Town III (No. 758); *k*, bone fish lure (?), from Mound D, upper levels, Old Town I (No. 925); *l*, bone fish lure (?), from Mound D, lower levels, Old Town I (No. 923).

used either with hook and line jigging (when often the hook itself or the sinker is the lure), or with the fish spear, and finds the lure among the northwestern Alaskan and Canadian Eskimos (dating back to the Thule culture), the Kutchin, Ingalik Tena, Carrier, Chilcotin, Shuswap, and Coast Salish. The Chilkat Tlingit used the lure in winter when spearing lake fish through the ice with the three-pronged spear. Identification of the Yakutat specimens as lures would be strengthened if there were evidence that they utilized this type of fish spear.

These archeological specimens may, however, be compared to small bone carvings of salmon and other fish from Kodiak, and to little whale or whale-tail effigies from Kodiak, Prince William Sound, Kachemak Bay, and the Alaska Peninsula, some of which were presumably amulets (de Laguna, 1934, pp. 208 ff.; 1956, pl. 42, *30*; Heizer, 1956, pp. 79 f.). Borden (1962) reports small stone effigies of fish with suspension hole in the middle of the back from Marpole (Eburne) and allied sites.

GORGES

Although used at Yakutat for catching aquatic birds, not fish, the gorge may be mentioned here. It is represented by four slender, slightly asymmetric pieces of bone, pointed at both ends (pl. 15, *f*, fig. 18, *b*, c). The two larger specimens, 10.6 and 11.7 cm. long, were identified by our informants as gorges for catching ducks or sea gulls, and the same explanation may apply to all. The smallest, about 6.3 cm., is from Old Town III; the rest are from Old Town II.

Our informants explained that a few families still use gorges if they have no shotgun shells. A line 4 feet long is attached to the middle of the gorge, and the latter is baited with a whole herring, eulachon, or smelt. Several such devices are attached to a line stretched across a stream where the current runs over shallows, so that the fish appear to be swimming. Ducks ascending the stream swallow the bait and are caught when the gorge turns crosswise in their throats. Sea gulls are taken in a similar fashion.

The gorge is a very ancient device for catching fish and birds. Rostlund (1952, p. 117) believes, however, that in western North America it is not and was not more widely distributed than compound fishhooks. Gaps in its distribution are due to the adoption of more complex types. For example, the Chugach catch gulls and ducks with a three-pronged piece of wood, or a stick with a crosspiece (Birket-Smith, 1953, pp. 38 ff.). Drucker (1950, Trait 225) records the gorge for waterfowl among the Chilkat, Kwakiutl, and Nootka. (Note that his "gorge" for kelpfish, Trait 38a, is really a bent hook.)

The gorge (for fish?) was used by three Salish tribes in the Gulf of Georgia (Barnett, 1939, Trait 86).

Since the gorge is simply a bone pin or splinter, pointed at both ends, archeological examples are difficult to identify. On Kodiak, however, gorges with an off-center groove for the line were numerous, especially in the lower levels (Heizer, 1956, p. 73). Drucker's (1943, p. 56) "bipointed forms" of "small slender bone objects," common in Northwest Coast archeological collections, may be gorges. Double-pointed bone pins of various sizes, and probably of various functions, were found at sites near Angoon (de Laguna, 1960, p. 117, pl. 9, *a–g*). What may be large bone gorges were common at Locarno Beach II (Borden, 1950, p. 16), and are probably represented at Cattle Point (King, 1950, pp. 44 ff., 56, fig. 13, *12*).

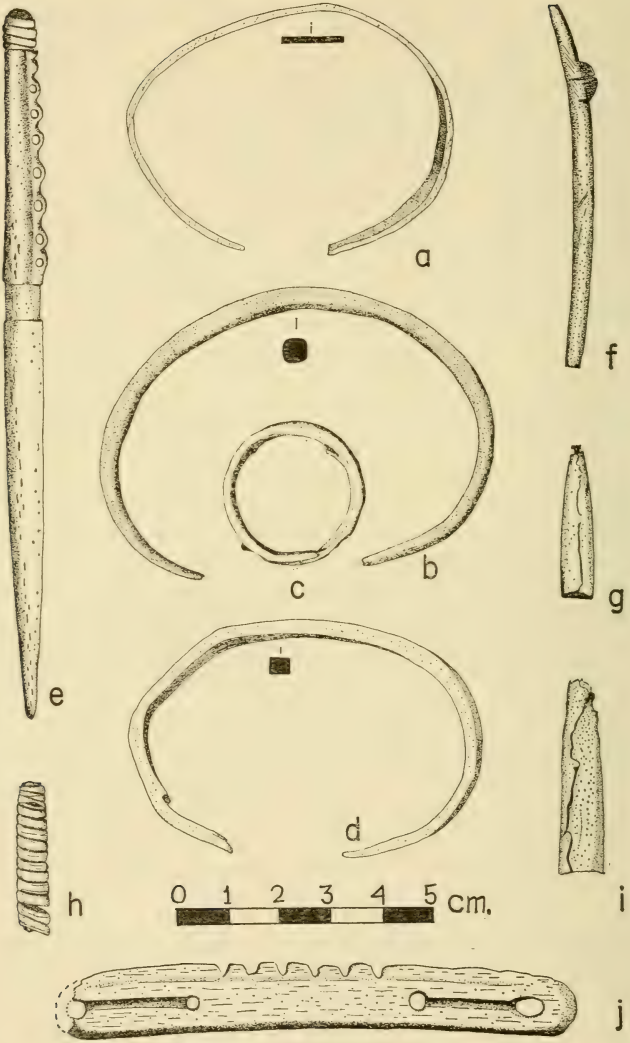
COPPER WIRE HOOKS

A pair of hooks made of copper wire (fig. 18, *j*) were found together in the fill of House Pit 1 in Old Town III. The wires are rectangular in section, about 0.2 by 0.3 cm. Both are laminated, with open splits for short distances, showing that the copper had not been sufficiently hammered to fuse the layers. The larger hook has a length of 18.1 cm., and is made of a piece of wire 29.3 cm. long; the smaller specimen is made of a section 13.7 cm. long. One end of each hook is pointed, the other blunt. About the latter is a winding of two-ply S-twist sinew (?) thread, which seizes the end of another thread, laid on at right angles. The latter is unfortunately broken off short on each specimen. The larger hook also has the remains of another lashing about its pointed end.

These hooks are too slender to have supported much weight. They may have been leaders to which were attached the sinew loops of snares for small game, since the trapped animal would have been unable to chew through the copper. This suggestion is advanced only tentatively, since copper may have been too valuable for such a purpose. Our informants offered no explanation.

ORNAMENTS

A variety of ornaments of native manufacture were found at Old Town (fig. 19), and include pendants of various materials, beads, copper bracelets and rings, pins and bodkins (some presumably for the nose), as well as objects of possible ritual significance, described below. The only objects reported ethnologically but not found in the sites, were labrets and ornaments of dentalia and haliotis shell.


a
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0 1 2 3 4 5 cm.

Figure 19
(For legend, see opposite page.)

PENDANTS

Five pendants were made of animal teeth, grooved or pierced at the root for suspension. From Old Town III there are a mountain-goat incisor (pl. 17, *f*), a bear molar (pl. 17, *e*) on which one root is grooved and the other broken, and an unidentifiable tooth (pl. 17, *d*) with two holes and a notch in the root. Seal canine pendants (pl. 17, *g*, *h*) come from Old Town II, and Old Town II or III.

An incised cylindrical pendant of greenstone (fig. 20, *b*), 7 cm. long and 0.7 cm. in diameter, is from Old Town III. A suspension hole, only 2.4 mm. in diameter, has been drilled at one end. The design about the lower part consists of three encircling lines, between which run obliquely slanting lines, forming a series of obtuse chevrons. Long pointed spurs run from this band toward the bottom of the pendant.

Pendants of animal teeth are too widely distributed to be very significant. Archeological specimens come from the Aleutian Islands, Kachemak Bay (all periods), and Prince William Sound, but not Kodiak (de Laguna, 1934, p. 203; 1956, p. 217). They are reported ethnologically from the Tlingit, Haida, Tsimshian, and northern Kwakiutl as earrings, and archeological specimens have been found in Tlingit, Tsimshian, and Coast Salish areas, the latter including Marpole (Eburne), Whalen Farm I and II, and Locarno Beach II (Drucker, 1943, p. 122; Borden 1950, pp. 17–21; de Laguna, 1960, p. 120).

The cylindrical stone pendant from Old Town is probably unique, for although stone pendants are occasionally encountered at sites in southwestern and southeastern Alaska and in Coast Salish country, these seem to be of other types.

COPPER BEADS AND DANGLERS

There are three rolls of sheet copper that served as ornaments (fig. 19, *g*, *i*). One from Old Town III is a small cone, 3 cm. long, with a maximum diameter of 0.8 cm. Remains of the thin cord of two-ply S-twist sinew by means of which this dangler was suspended protrude from the smaller end (pl. 19, *g*).

A second specimen from Old Town III is a tube, now (3.8) cm. long

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FIGURE 19.—Ornaments. Drawn by Donald F. McGeein. *a*, Copper bracelet, from Mound B, lower levels, Old Town II (No. 140); *b*, copper bracelet, from fill of House Pit 1, Old Town III (No. 832); *c*, copper ring, from Mound B, lower levels, Old Town II (No. 160); *d*, copper bracelet, from below floor of House Pit 1, Old Town III (No. 971); *e*, bone bodkin with copper cap, from Mound B, lower levels, Old Town II (No. 375); *f*, bone bodkin, from Mound D, upper levels, Old Town I (No. 924); *g*, copper dangler, from Mound B, upper levels, Old Town III (No. 139); *h*, coil of copper wire, from Mound B, upper levels, Old Town III (No. 583); *i*, copper dangler, from fill of House 8, Old Town II (No. 969); *j*, bone catch or buckle, from Mound B, lower levels, Old Town II (No. 972).

and 1 cm. in diameter, containing organic matter (roots?), preserved by the copper. A similar specimen from Old Town II is now (3.5) cm. long (pl. 19, *i*). It was strung or hung on a string of two-ply S-twist sinew(?) cord. Organic matter, including a coarse black (human?) hair, adheres to the exterior. The two tubes may have been beads, not pendants or danglers.

The tubular copper ornaments are similar to archeological specimens from Kachemak Bay IV, Daxatkanada near Angoon, and from the territory of the southern Kwakiutl, Coast Salish (Comox), and Interior Salish (Drucker, 1943, p. 122; de Laguna, 1934, pl. 49, *5*, *6*, p. 207; 1960, p. 126, pl. 10, *l*). Necklaces of copper beads were worn by the Chilkat Tlingit, who also wore copper ear pendants, as did the Tsimshian, Haida, Kwakiutl, Nootka, and Bella Coola (Drucker, 1950, Traits 625 and 653). Although Drucker (1943, p. 59) suggested that tubular copper beads or pendants might belong only to the historic period, they were certainly older at Yakutat and Kachemak Bay. It was probably only by accident that none was found in Prince William Sound.

COILED COPPER WIRE BEADS

Two coils of copper wire were found in Old Town III. One (see fig. 18, *h*), 2.9 cm. long and 0.6 cm. in diameter, was evidently made by winding a thin copper strip 15 times around a slender cylindrical shaft. The second coil, 2.6 cm. long and 1.1 cm. in diameter, is made of round wire.

These coils were probably strung as beads for necklaces, like those of "ancient form" illustrated by Niblack (1890, pl. VI, figs. *9*, *10*) from the Haida, for a Yakutat informant said that sometimes copper wire was twisted like a rope and worn as a necklace. Some bracelets and noserings were also said to have been made of twisted copper, although these ornaments were probably solid, not open, coils of wire (cf. Niblack, 1890, pl. VI, fig. 8).

COAL BEADS

Some 77 pieces of coal were found at Old Town. Of these, 15 were beads, 21 unfinished beads, and 41 unmodified lumps ranging in size from 1.6 to 5.2 cm. in maximum diameter. The latter presumably represented material from which beads were to be made. Although our informants reported that their ancestors knew that coal would burn and called it "Raven's ashes (or charcoal)," they did not use it for fuel, and there is no archeological evidence to suggest this. Coal can be found on the mainland at Eleanor Cove near Knight Island, and on the mountainside on the west shore of Yakutat Bay. Presumably, the coal at Old Town came from the first locality, and several lumps are waterworn as if they had been picked up on a beach or along a stream. The coal is soft (3 on Mohs' scale).

Of the 15 finished and 21 unfinished beads, all but two are cylindrical (pl. 17, *i–y*, *aa*, *bb*). They were evidently made by first grinding the lump into a cylindrical or nearly cylindrical shape. Then the ends were ground flat and a hole was begun, usually drilled from both ends. In three instances the bead split during the drilling process (pl. 17, *y*). Three specimens have been successfully drilled, but the exteriors are still rough (pl. 17, *aa*), suggesting that the final grinding and polishing was not undertaken until the bead had been safely drilled. These holes are from 2 to 4 mm. in diameter, arguing for the use of a drill of copper or iron wire. Finished beads are from 1.6 to 2.5 cm. long, though some fragmentary specimens were probably longer, especially since the unfinished beads range up to 5.2 cm. in length (pl. 17, *aa*). The diameters of most are about 0.7 cm., although again several unfinished beads are much thicker.

Two specimens, both (?) from Old Town III, are disk shaped. One is very tiny (pl. 17, *c*) with a diameter of 6 mm., a thickness of 2 mm., and a hole only 1.5 mm. in diameter. The unfinished disk bead (pl. 17, *z*) has a maximum diameter of 3.3 cm., and is 0.8 cm. thick.

The proveniences of these coal specimens are: 14 beads, 16 unfinished beads, and 37 lumps from Old Town III; 3 unfinished beads and 3 lumps from Old Town II; 1 lump from Old Town I; and 1 bead, two unfinished beads, and 1 lump from Old Town, level unknown. It is obvious that coal beads are characteristic of the latest period of occupation.

BONE BEADS

Two bone beads come from Old Town III. The first is made from a flat, oval piece of bird bone (pl. 17, *b*), 1.6 by 1.1 cm. The second is a perforated halibut vertebra disk (pl. 17, *a*), 2.1 cm. in diameter and 0.8 cm. thick.

It is curious that so few beads of material other than coal should have been found at Old Town, for their prehistoric Chugach neighbors manufactured quantities—of bone, of "ivory" (from bear canines), of shell, and of stone, in oval, rectangular, disk, and tubular shapes, and possessed a greater variety of beads than any other known Eskimo group. They did not, apparently, make ornaments of coal, so the oval bone bead and the fish vertebra disk are the only Yakutat specimens duplicated in Chugach sites. The fish vertebra disk, or ring, is known from Kachemak Bay III, Kodiak, and the Aleutians (de Laguna, 1956, pp. 210 ff.; Heizer, 1956, p. 77).

On Kodiak and Kachemak Bay, lignite (coal, jet) or oil shale was commonly used for labrets, and from Uyak Bay we have two coal beads, one globular, the other tubular like the Yakutat specimens

(Heizer, 1956, pp. 53 f.; de Laguna, 1956, p. 273). Otherwise, from Uyak there are only three disk stone beads and a score made from sections of bird bone (Heizer, 1956, pp. 54, 77). Cylindrical amber beads are known from the Aleutians. On Kachemak Bay, cylindrical beads of naturally baked red shale were most common, although there were also disk beads of shale, and small rectangular beads of bone and shell (de Laguna, 1934, pl. 50, p. 202).

A cylindrical coal bead, identical with the Yakutat specimens, was found at Daxatkanada (de Laguna, 1960, p. 121, pl. 10, *u*); the material undoubtedly had been obtained from the soft-coal beds near Angoon. At the same site there were also tubular beads of bear tooth "ivory" and of bird bone as well as disk-shaped forms of shale, all types represented in Prince William Sound.

Aside from the Angoon specimens and some disk shell beads from the Haida, no beads are reported archeologically from the northern and central Northwest Coast. Drucker (1943, pp. 58 ff., 122) recognizes the following types: dentalia, clamshell disks, tubular sections of bird bone, narrow pieces of mammal bone, and asymmetric lumps of cannel coal. All of these came from the great site at Marpole (Eburne), as did disk beads of stone. Borden (1950, pp. 17, 19, 20) reports disk beads of coal shale from Whalen Farm II, and also stone beads with lenticular cross section from Locarno Beach II, but ascribes to a later period the numerous small disk stone beads found near Locarno Beach. At Cattle Point there were only a few disk beads of jadeite and shell and a few tubular bird bone beads (King, 1950, p. 61).

On the whole, the beads from Yakutat, as well as those from Angoon, are more like those of the southwestern Alaskan mainland than of the rest of the Northwest Coast. Tubular beads, other than naturally cylindrical sections of bird bone, seem to be characteristic of the Eskimo. The use of shell for beads and the flat disk shape may have come from the south, for they do not appear in Kachemak Bay until the Third Period (de Laguna, 1934, pp. 202 ff.). Flat oval beads of shell and stone, although related to the disk and rectangular forms, are not as yet known outside of Prince William Sound, except for the single oval bone bead from Yakutat. We should have expected tubular bone beads, shell (and shale?) disk beads, and dentalia at Yakutat, and perhaps it was only accidental that no examples were present in our diggings. Disk shell beads were reported from the shaman's grave on Knight Island, and our informants spoke of ornaments of dentalia.

COPPER BRACELETS

There are six bracelets from Old Town, made from pieces of copper that have been folded and hammered into narrow strips or bars with a laminated structure. These are round in cross section (fig. 19, *b*), 0.3 and 0.4 cm. in diameter, or are rectangular (fig. 19, *d*), measuring 0.4 by 0.3 or 0.3 by 0.2 cm, or they are flat (19, *a*), from 0.6 to 1.1 cm. wide. All taper toward the blunt points at the ends. The rod or bar is bent into an oval, leaving a gap between the ends so that the bracelet could be slipped onto the wrist. These ornaments range in diameter from 5.2 by 4.8 to 7.7 by 5.5 cm. The smallest was perhaps for a child; the rest would have fitted grown women. Four specimens are from Old Town III, one is from Old Town II, and one is from an unknown level.

These copper bracelets are similar to one from Kachemak Bay IV (de Laguna, 1934, pl. 49, *10*). Curiously enough, they are not reported from either the Chugach or the Eyak, who had copper ornaments of other kinds. Copper bracelets and anklets, for women only, are known ethnologically from the Tlingit and Haida, and copper bracelets from the northern Kwakiutl (Xaihais) (Drucker, 1950, Traits 656, 658). Bracelets (type unspecified) were worn by some of the Coast Salish, as were copper anklets (Barnett, 1939, Traits 1157, 1159). Both bracelets and anklets of copper are known archeologically from the Thompson River valley (de Laguna, 1934, p. 207).

COPPER RINGS

There are four copper rings made in the same way as the bracelets, although the gaps between the ends of the strips are closed (fig. 19, *c*). The smallest, from an unknown level at Old Town, is made of a band 0.3 cm. wide and 1.1 cm. thick. Its present diameter is only 0.8 cm. It may have been an ear pendant, or if spread open it could have been worn on the finger of a child or the little finger of a woman.

The other three specimens have diameters of 2.4 to 3.3 cm. and are made of rods with rectangular cross sections, 2 by 1.5 to 3 by 3 mm. One is from Old Town III, the other two from Old Town II. They appear to have been too large to have been worn on the fingers, and our informants suggested that they might have been noserings. Formerly the septum of the nose was pierced; in modern times the silver nosering has a gap that slips easily onto the septum. Since the archeological rings have no gaps, it is hard to understand how they could have been lost if they had been worn in holes in the nose.

Copper rings have been found on Prince William Sound and at Dixthada in the Tanana Valley (de Laguna, 1956, pl. 43, *25*; Rainey, 1939, fig. 3, *9*). Copper finger rings were worn by Eyak men and women, and also by the Atna above them on the Copper River. A shaman seen by Abercrombie among the Eyak in 1884 drew a lock of hair through a copper ring on each side of his head (Birket-Smith and de Laguna, 1938, pp. 59, 62). Niblack (1890, p. 262) reports of the

Northwest Coast Indians that finger rings "were formerly made of copper, bone, shell, or black slate and were ornamented with totemic designs. Now silver has so generally displaced other materials that the primitive types are rarely seen."

Copper pendants in the form of flat crescents and rings have been found archeologically in the territory of the southern Kwakiutl and Coast Salish (Drucker, 1943, pp. 59, 122), and Borden (personal communication) reports copper ornaments at Beach Grove and Marpole (Eburne).

The Tlingit also wore rings of copper and silver as ear ornaments.

ORNAMENTAL BODKINS OR PINS

There are two nicely made bone pins or bodkins. One from Old Town I (fig. 19, *f*) is a slightly curved rod with blunt ends, 7.1 cm. long and 0.4 cm. in diameter. Near one end is a tiny projection like a blade. A small groove runs across this and around the shaft, as if for the attachment of something, perhaps a feather.

The second specimen (fig. 19, *e*), from Old Town II, is a pointed bone pin, 13.9 cm. long, 0.8 by 0.6 cm. in diameter. The blunt end is bound around with a copper band. Between this and a shallow encircling groove in the middle, is a scalloped ridge pierced by seven tiny holes, to which perhaps feathers had been attached. On the side not visible in the illustration there is also a row of finely incised chevrons.

The ornamental bodkins may have been worn in the hair, or as ear or nose pins, although we must admit that their function is unknown.

Bone pins with an enlargement at one end and attached pendants were among the ornaments worn in the nasal septum by the Aleut (Jochelson, 1925, fig. 95), the Chugach, and the Eskimo of the Alaska Peninsula, but what were probably nose pins from Kachemak Bay were short pegs with a groove about the middle. Both styles are represented on Kodiak (de Laguna, 1934, p. 207; 1956, pp. 207–210; Heizer, 1956, pl. 69, *d–n*). A broken bone pin with a T-shaped head from Daxatkanada near Angoon may also have been a nose ornament (de Laguna, 1960, pl. 10, *k*, p. 122). The Indians of the northern Northwest Coast formerly wore "a bone or ivory stick or cylinder" in the nose, and the Tlingit and Haida sometimes thrust a bone or ivory peg with enlarged head through a hole in the ear. The ear pin illustrated by Niblack (1890, fig. 12, *a*, p. 261) has a perforation through the head as if something had once been suspended from it. Bone pins as ear ornaments are reported sporadically from all the major groups on the northern and central Northwest Coast except the Haida, and bone pins for the nose are also widely distributed, except that among the Tlingit and Haida they were worn only by shamans (Drucker, 1950, Traits 627, 632). This suggests that the nose pin was the older style of ornament, retained by shamans, after the silver nosering had become popular in historic times for secular wear. The chief, a young woman, and a man, sketched at Yakutat by Suria in 1791 (pls. v, vi, viii *in* Wagner, 1936), all seem to be wearing some kind of nose pin. It is not clear from Barnett's list (1939, Trait 1136) whether the Gulf of Georgia Salish wore a bone pin in the nose or only used it to make a hole in the septum. Nose ornaments are well known from the interior Athabaskans.

It would appear that nose ornaments were characteristic of the Northwest Coast. They seem to be relatively late in southwestern Alaska, perhaps not antedating Kachemak Bay III, and are a trait linking the Aleut and Pacific Eskimo with their neighbors, in the interior, at Yakutat, and farther south, rather than with the northern Eskimo.

LABRETS

Since the Yakutat women wore large medial labrets in the late 18th century (see sketches by Suria with Malaspina, *in* Wagner, 1936, pls. ii, vi, and *in* Olson, 1956, p. 677), and a few were still wearing small silver studs a hundred years later, it is surprising that we found no labrets. To be sure, Yakutat labrets are said to have been made of wood, and so would not have been preserved, but the same descriptions are given of Tlingit labrets in general, although specimens of stone were found in the Angoon area (de Laguna, 1960, pp. 121 f.). It is more likely that the prehistoric Yakutat, like the Copper River Eyak, did not wear this type of ornament (Birket-Smith and de Laguna, 1938, p. 62), and the apparent absence of the labret from this area requires explanation in view of its otherwise wide distribution.

In southwestern Alaska and in the southern Bristol Bay area, both the larger medial labrets and the smaller lateral labrets occur archeologically in sites of all known periods and are reported ethnologically. They were worn by both sexes, and within this area the most elaborate forms were evolved (de Laguna, 1934, pp. 205 ff.; 1956, pp. 205, 207; Heizer, 1956, pl. 79; Larsen, 1950, pp. 181, 183). The medial labret worn by women is reported ethnographically from the Tlingit, Haida, Tsimshian, and northern Kwakiutl, but not farther south (Drucker, 1950, Traits 636–638; Niblack, 1890, p. 260), although archeological labrets are known from the Tlingit, Haida, Bella Coola, and Coast Salish areas (Drucker, 1943, p. 122; de Laguna, 1934, pp. 204 ff.). A medial labret was found in Locarno Beach I, where an antler figurine shows that it was worn by men (Borden, 1951, pl. I, *12*). Other labrets from the Fraser Delta area include small lateral forms (Duff, 1956). Borden (1962) ascribes labrets to both the Marpole and

Locarno Beach Phases, and suggests that they diffused northward from this area to the Aleut and Eskimo.

A labret worn in the middle of the lower lip (by both sexes?) is probably the oldest style. Very large saucer-shaped medial labrets worn only by women represent a local development on the northern Northwest Coast, while the lateral labret worn in pairs only by men is another local development among the Eskimo north of Bristol Bay. Although labrets, including some large medial ones, belong to the Ipiutak culture of Point Hope and also to the older Norton Phase of Bristol Bay (Giddings, 1960, p. 125), the labret is curiously absent from other old northwestern Alaskan cultures until modern times, when it was presumably reintroduced from the south (Birket-Smith, 1953, pp. 218 ff.). An interior source is less likely, for it has been reported only from the Ingalik Tena, Tanaina, Babine, and possibly the Chilcotin; the first three seem to have adopted it only recently from their coastal neighbors. It did not occur in Tena sites.

The labret is thus one of the ancient traits linking the southern Eskimo and the southern Northwest Coast, and should, therefore, have been found at Yakutat, probably at some site more ancient than Old Town. Presumably it was abandoned at Yakutat, as it was in northern Alaska and on the central and southern Northwest Coast. Its revival at Yakutat must be ascribed to recent Tlingit influence. Perhaps it was discarded on the Gulf of Alaska because of migrations to the coast of Copper River and Alsek River Athabaskans who did not wear it. Interior influences may also explain why the labret was abandoned on the central and southern Northwest Coast.

BONE CATCH

A flat piece of bone with rounded ends (fig. 19, *j*), about 10.3 cm. long when complete, and 1.3 cm. wide, comes from Old Town II. In the middle of one edge are six notches, and at each end is a pair of holes connected on one surface by a groove. This object was probably a catch or fastener of some kind, for if a line were passed through the two pairs of holes it could be tightened by catching a loop in one of the notches. Our Angoon informants told us that decorated hats sometimes had a bone catch to tighten the cord under the chin.

WOODEN COMB

A carbonized wooden comb comes from Old Town II (fig. 20, *c*). It is 7.4 cm. long and about 4 cm. wide, and originally had six teeth. The handle is carved to represent a bird's head, probably the Raven, a totemic crest of the Kʷack̓qwan sib that owned Yakutat Bay. The flat surfaces are decorated with the eye motif characteristic of Northwest Coast art, although here it is not very well executed.

Bone or wooden combs were used for dressing the hair of ordinary persons among the Tlingit (Niblack, 1890, pp. 259, figs. 11, *c*, *d*). Possibly the Yakutat comb belonged to a shaman, since Tlingit shamans used combs to hold up their long tangled hair, not to comb it (Swanton, 1908, fig. 116). Furthermore, this specimen came from the Storage House, where two figurines were found which may also have been associated with shamanism (see pp. 172–175).

The carved one-piece comb of wood, less often of bone, is common on the Northwest Coast (Drucker, 1950, Traits 605, 606; Barnett, 1939, Trait 1175). The Yakutat specimen marks the northwestern limit of this distribution, since no one-piece combs are known from the Aleut, Pacific Eskimo, or Copper River Eyak, except for a few presumed copies of Russian combs (de Laguna, 1947, pp. 222 ff.; Birket-Smith and de Laguna, 1938, p. 60; Birket-Smith, 1953, p. 69). Instead, the composite comb, made of separate tines lashed together, is the only type known archeologically from southwestern Alaska. The one-piece comb of bone or ivory is, however, the characteristic northern Eskimo type (dating back at least to the Old Bering Sea culture), and would appear to be related to the wooden comb on the Northwest Coast. Possibly this form was once used in southwestern Alaska, perhaps of wood since no examples have survived, or the links in its distribution are to be sought in the little-known interior (de Laguna, 1947, pp. 222 ff.).

OBJECTS OF POSSIBLE RITUAL SIGNIFICANCE

BAND OF RYEGRASS STEMS

Part of a fragile band made of sections of ryegrass stems strung together (fig. 23, *d*, *d′*) was found under the floor of the Storage House in Old Town II. The grass tubes, 3 cm. long and about 0.5 cm. in diameter, were laced together with what appear to be grass fibers. The original length of the band could not be determined, although several dozen tubes were recovered.

Our informants were unable to explain this object, although something similar, made of dentalium shells and glass beads, was obtained in trade from the Tsimshian and was worn as a hair ornament by little girls and young women of wealthy families. The hair was drawn tightly back and passed through a ring (preferably of drift bamboo) at the nape, to which the long dangling ornament was tied. As one informant explained, "When you move, it's like the wind waving the bushes. It makes you grow." It is possible that this band of grass stems was made by children in imitation of the valuable dentalia ornament.

If this interpretation is correct, it would indicate that the modern ornament was worn in prehistoric times. We can find something

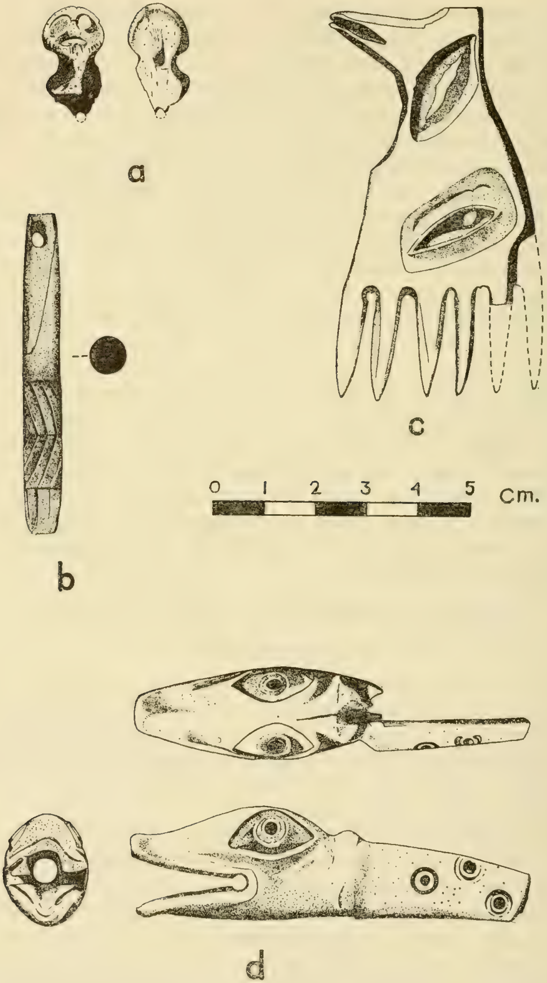

FIGURE 20.—Decorated objects. Drawn by Donald F. McGeein. *a*, Fragment of bone figure, worn as pendant, from fill of Storage House, Old Town II (No. 223); *b*, incised greenstone pendant, from Mound A, level unknown, Old Town III (49–25–26); *c*, wooden comb, carved to represent the Raven, from floor of Storage House, Old Town II (No. 192); *d*, carved bone socket piece for harpoon (?), from Mound B, lower levels, Old Town II (No. 3).

similar in the "veil" or nape ornament of beads and dentalia worn by the daughter of a Chugach chief (Birket-Smith, 1953, p. 68). According to Krause, the Tlingit "ornament made of dentalium and beads . . . covers the braid in a broad band and hangs almost to the ground" (Krause, 1956, p. 102). The purpose of hair ornaments worn by adolescent girls among the Tlingit, Haida, Tsimshian, Kwakiutl, Bella Coola, and Nootka was to make the hair grow, as our Yakutat informant implied. "The weights were usually bunches of dentalia, pieces of copper, etc." (Drucker, 1950, Trait 1182, p. 276). Some of these were metal strips bent into a U that ended in a pair of spirals (Niblack, 1890, pl. VI, fig. 11, p. 261), but that worn by Nootka girls was evidently similar to the dentalia bead ornament of the Tlingit and Yakutat, and the magical association with growth is similar. Although on the central Northwest Coast this ornament was specifically associated with the first menses, among the Tlingit, Yakutat, and Chugach it was not so restricted. It should not be confused with the beaded hood worn by pubescent girls among so many northwestern American tribes (Birket-Smith and de Laguna, 1938, p. 157; Drucker, 1950, Trait 1191). We should note that all of the Northwest Coast, interior Athabaskan, plateau, and Gulf of Alaska Indians treated the girl's adolescence as the most important crisis of her life, affecting her whole future and that of her family, although the particular rites varied. Apparently the Aleut and Chugach, unlike the northern Eskimo, shared this concern, and many of their specific practices were identical with or very similar to those of the Tlingit (Birket-Smith, 1953, pp. 87 ff.; Laughlin and Marsh, 1951, pp. 84 ff.; Laughlin, 1952, pp. 34, 40).

BIRD BONE TUBES

There are two tubes of bird bone (swan femur?), 10.4 and 17.1 cm. long, from Old Town II, the first coming from the floor of the Storage House which yielded a number of presumed ritual or ceremonial objects. An incised fragment of bird bone, from Old Town III, may be a fragment of a similar tube.

Our informants could only hazard that these tubes were part of a shaman's outfit, either pieces of his rattling bone necklace, or, more probably, the tube through which he sucked out disease from a patient's body. The statement that among the Tlingit: "The wing bones [of the eagle], particularly the radius and ulna, are used in illness as tubes for sucking up fluids" (Niblack, 1890, p. 350, quoting von Langsdorff), suggests another possible connection with shamanistic cures.

Even though our Yakutat informants denied that bone drinking tubes were used by adolescent girls, this possibility cannot be dismissed, since such tubes were employed among many interior groups, including the Copper River Atna, Southern Tutchone of the upper Alsek, Tagish, and Inland Tlingit, with all of whom the Yakutat had close affiliations (McClellan, personal communication). Moreover, among the Copper River Eyak the adolescent girl sucked water through a swan bone, although the drinking tube may not have been restricted to her use (Birket-Smith and de Laguna, 1938, pp. 87, 157).

Although the Northwest Coast Indians imposed water restrictions on adolescent girls, only some of the central and southern tribes required use of the bone drinking tube (Drucker, 1950, Traits 1168, and 1172; Barnett, 1939, Trait 1554). Such tubes were used for different occasions, for example, by the Haida, interior Tsimshian, Kwakiutl, and Nootka for drinking water from covered buckets in canoes (Drucker, 1950, Trait 466). Among the Eskimo in general the drinking tube is an article of everyday use.

Bird bone tubes have, of course, been found archeologically on the Northwest Coast, in the interior, and in southwestern Alaska, and presumably served many purposes which cannot now be determined. A bird-bone tube was, for example, found at the historic site of Daxatkanada near Angoon (de Laguna, 1960, pl. 9, *y*).

AMULETS (?)

Several pebbles or pieces of mineral, found in the fills or on the floors of house pits, may have been collected by the natives out of curiosity or to use as amulets. These were a pebble of crystalline or opaline stone from the fill of House Pit 1 and another from House Pit 7; a scrap of mica and a large quartz crystal, 5.4 cm. long, from the fill of House 8; a limestone nodule naturally ringed around with a raised band and slightly modified by carving, from just above the floor of House 8; and, lastly, a lump of iron oxide and a piece of vesicular slag from the Storage House. The last was apparently a lump ot mineral which had melted when the cache burned.

INCISED PEBBLES

From Old Town III is a sandstone pebble (fig. 21, *a*, *a′*), 6.6 by 5.5 cm. in diameter, and 1.8 cm. thick, with a poorly executed, fine incising on both surfaces. On one side (*a*) are two rectangular figures above, and below, a transverse band made up of zigzag lines between pairs of bordering lines. Two of the triangular areas in the zigzag are filled with horizontal hatching. On the other face (*a′*) is a transverse band of crosshatching between parallel lines, and six detached squares or rectangles in two rows, flanked on each side by scratches that suggest lines with slanting spurs.

A flat piece of limestone (fig. 21, *c*), (6.8) by 4.2 cm., with five transverse lines scratched across one face, is from Old Town III. There is also an incised pebble from a pit below the floor of House Pit 1, but the scratches on one surface were probably not intended to make a pattern.

These incised stones, or perhaps only the first, were probably rubbing amulets, like the hard cobbles used by adolescent girls, widows, peace hostages, and aristocratic youths to scratch their bodies, or to rub around their lips as a magical precaution against uttering provocative words or gossip. Although it was implied at Yakutat that such stones were plain, some incised pebbles from the historic Tlingit site of Daxatkanada were tentatively identified as rubbing amulets for adolescent girls by our Angoon informants (de Laguna, 1960, pp. 122 ff.). One informant said she had seen such a rubbing stone with a picture of a bear on it, pierced for suspension on a cord around the girl's neck. Such pierced pebbles with incised representations of animals have been collected from the Tlingit (deposited in Washington State Museum, Seattle). A stone with a fairly realistic picture of a killer whale comes from the Developmental Phase at Cattle Point, and is similar in spirit to the designs on these ethnological Tlingit amulets (King, 1950, fig. 17, *17*). From a later period at the same site there is a piece of stone (King, 1950, fig. 17, *18*) on which is incised what looks like a human face with large eyes, nose, and mouth, possibly with a nose ornament and tattooed or painted lines on the cheeks. These specimens may be related to the northern rubbing amulets.

The decoration of the Yakutat pebble (fig. 21, *a*, *a'*) is, however, completely geometric. Pebbles or roughly shaped stone plaques with similar designs also were found at Daxatkanada (de Laguna, 1960, fig. 15, pp. 122 ff., 127 f.), at early prehistoric Chugach sites, and at (late prehistoric?) sites on Kodiak (Heizer, 1956, p. 52). None was found at Kachemak Bay, but this may mean only that they escaped notice.

Heizer (1947, pp. 288 f.; 1952, p. 266) has pointed out that the designs on the Kodiak pebbles actually represent very conventionalized anthropomorphic figures. Such features as the brows, nose, mouth, labret, hair, or tattooing are merely suggested by scratches confined to a small area near one end of the pebble. The rest of the design, consisting of geometric patterns, evidently represents the clothing, to which more attention was paid than to the face. The

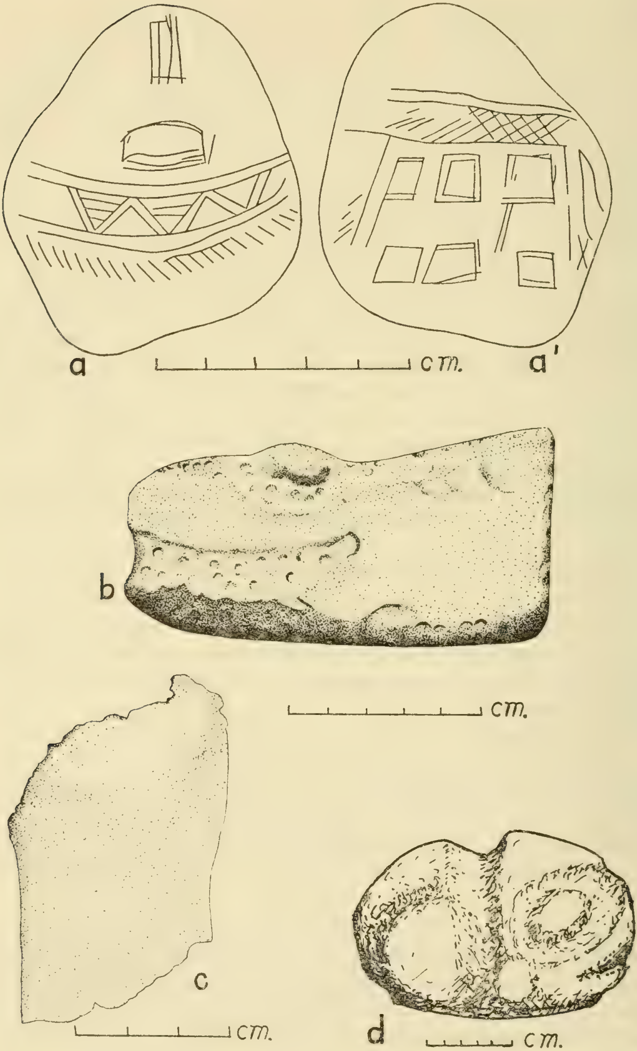
a
cm.
a'
b
cm.
c
cm.
d
cm.

Figure 21
(For legend, see opposite page.)

latter is indicated by the same abbreviated design elements used to represent faces on the petroglyphs at Cape Alitak, Kodiak Island, on Chugach pictographs, and on Northwest Coast petroglyphs.

Three of the Angoon pebbles are also faces, but the details are different, for on two of these the eyes appear to be weeping (de Laguna, 1960, fig. 15, *c*, *e*). Otherwise the designs are similar in that they consist of geometric elements, chiefly zigzags and spurred lines and panels.

The Chugach pebbles or plaques exhibit perhaps the richest series of geometric elements, but there is nothing to suggest a face, and the designs correspond, therefore, only to the "clothing" of the Kodiak figures.

All the specific design elements on the Yakutat pebble can be duplicated or closely matched by those from Kodiak, Prince William Sound, and Angoon; the layout of the designs is also similar in these areas. Can we take the Kodiak specimens as a guide and interpret all of these pebbles as highly conventionalized anthropomorphic representations? If so, it is obvious that clothing is more important than the features. Perhaps ceremonial garments are portrayed, and the "faces" themselves may be really masks. In this case, the two rectangles on one side (*a*) of the Yakutat pebble are all that is left of the mask or face; the horizontal band below suggests a fringed garment, perhaps the apron of a dancer or of a shaman (see Emmons, 1907, pp. 346, 395 ff., figs. 588, 589). On the reverse side (*a′*) would be the back of the figure, and this design bears a striking resemblance to that of the Chilkat blanket from the grave on Knight Island (pl. 19). The band across the top, the fringed ends, the row of rectangles, two of which are "tasseled" at the lower left corner, are all duplicated in the Yakutat blanket (see pp. 187–192), and suggest that the same geometric style of blanket may have been made during the late prehistoric period represented by the upper part of Mound B, or Old Town III. If the geometric patterns of the Daxatkanada pebbles can also be interpreted as representing blankets, although this is less certain, we might infer the persistence of the geometric Chilkat blanket weaving into early historic times in the Angoon area. In

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FIGURE 21.—Carved and incised stone objects. Drawn by Donald F. McGeein (except *d*, sketched by F. de Laguna from photograph). *a*, *a′*, Pebble incised to represent a human figure (?), wearing dancing apron (*a*) and Chilkat blanket (*a′*), from Mound B, upper levels, Old Town III (No. 278); *b*, carved stone hand hammer or pestle, from Mound B, upper levels, Old Town III (No. 266); *c*, incised limestone fragment, from Mound B, upper levels, Old Town III (No. 30); *d*, carved stone maul head, representing the Frog (?), found in bed of Situk River near U.S. Fish and Wildlife Service weir.

this connection we should note that Lisiansky, in 1805, observed of the Sitka Tlingit:

> The rich wrap themselves up sometimes in white blankets, manufactured in the country, from the wool of the white sheep [read *mountain goat*], which is as soft and fine as the Spanish merino. These blankets are embroidered with square figures, and fringed with black and yellow tassels. Some of them are so curiously worked on one side with the fur of the sea-otter, that they appear as if lined with it, and are very handsome. [Lisiansky, 1814, p. 238.]

This might be a good description of the type of blanket in question.

The Kodiak designs hint at a long frock of gutskin, with tufted seams, or one patched together from small pelts, garments characteristic of the Aleut and Pacific Eskimo in late prehistoric and early historic times. It is impossible to guess at what type of costume may have been intended by the Chugach designs, since the latter are so completely stylized. However, they seem to be more like the patterns of baskets, textiles, or skin mosaic, than any of the types of design usually incised by the Eskimo on ivory or bone.

CARVED WOODEN SLAB

A completely carbonized, carved wooden slab comes from Old Town II (fig. 16, *c*). It is elliptical in outline, measuring 28.4 by 10.3 cm., and has a round hole through the wider end. One surface is flat; the other is slightly convex in the middle, with a narrow flange around the edge, and bears a carved decoration. The design elements resemble somewhat the traditional eye motif of Northwest Coast art. They may represent the suction disks on squid tentacles.

The function of this unique specimen is unknown. It could have been part of a song leader's dance paddle, or half of a snapper, a kind of rattle made of two pieces of wood fastened together (see Niblack, 1890, pl. LVIII, fig. 305, from the Hoonah Tlingit).

HUMAN FIGURINES

A broken, charred bone carving (fig. 20, *a*) from the fill of the Storage House in Old Town II represents the head and shoulders of a man, with round face, large eyes and mouth. There is a small protrusion at the back, suggesting a knot of hair. The figurine is broken off at the shoulders, and the edge of a hole can be seen in the middle of the chest. The specimen is now (2.1) cm. long, 1.2 cm. wide, and 1 cm. thick. The function is unknown, but it could have been worn as an ornament or amulet. When complete it may have been rather like the ivory figurine from the lower levels at Uyak Bay, Kodiak Island (Heizer, 1956, pl. 82, *p*).

A charred wood figurine (fig. 22) was found on the floor of the Storage House, beside a piece of chopped wood. The figurine is

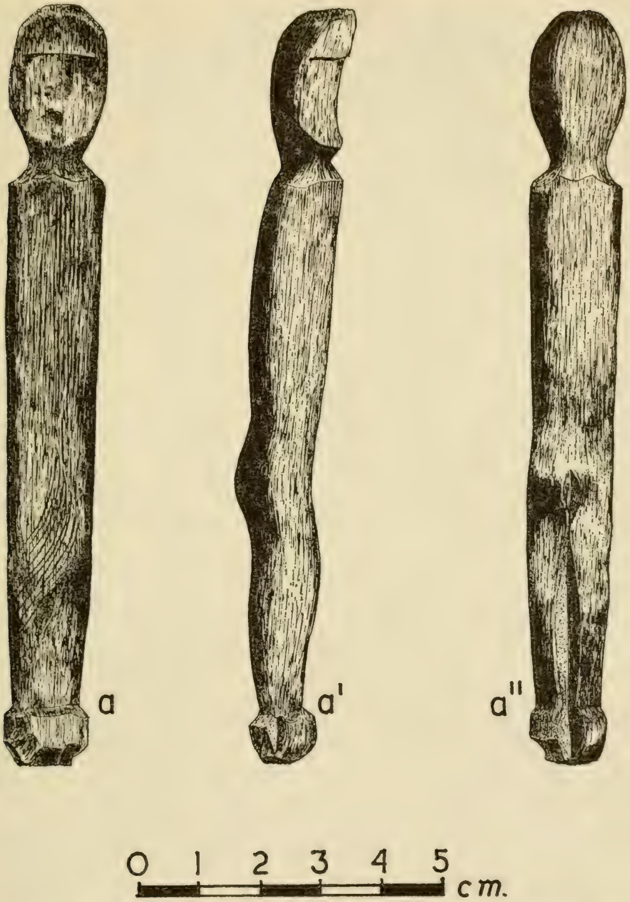

FIGURE 22.—Wooden figurine, from floor of Storage House, Old Town II (No. 194). Drawn by Donald F. McGeein.

12.2 cm. tall, 1.6 cm. wide, and 2 cm. thick. It represents an armless, nude figure, probably male, although there is no clear indication of sex. The head and neck are plainly carved, although the face is shown only by a concave area, without features, between what appear to be bangs and a prominent chin. The torso is long waisted, as is common in Tlingit portrayals of the human figure. The small of the back, the buttocks, and the slightly bent knees are all indicated, but the feet are shown simply by a roughly cut knob at the base. One has the impression that the back of the figure was more carefully shaped than the front, and that the specimen may be unfinished.

The function of this object is uncertain. It may have been intended for the shank of a halibut hook, since these were traditionally carved to represent a human being, an animal, or a bird. Niblack (1890, pl. xxxi, figs. 155, 156) illustrates Tlingit examples similar to ones seen at Yakutat. In this case, the chest of the figure would have been perforated to attach the line, and the other part of the V-shaped hook with the bone barb would have been fastened by a lashing around the ankles.

However, we should note that one of the shamans at Yakutat who died at the end of the last century possessed a wooden figure representing one of his guardian spirits, the Child of the Sun. During seances, this doll is said to have become animated and danced. The first shaman at Yakutat to obtain this spirit was X̣atgawet, the great leader associated by some informants with Knight Island, and the spirit was inherited by his successors. Our specimen may, therefore, be a shaman's doll.

Carved figurines used by shamans in this fashion are known from the Eyak, Chugach, Tanaina, Koniag (?), and Aleut (?) (Birket-Smith and de Laguna, 1938, p. 210; de Laguna, 1956, pp. 221, 223; Birket-Smith, 1953, pp. 127, 217). Archeological figures interpreted as shamans' dolls are from Kachemak Bay II and III, Port Moller on the Alaska Peninsula, and Kodiak. Specimens from the first two areas have a pointed head, suggesting the Chugach notion about shamans' spirits (de Laguna, 1934, pp. 114 f., 208; Birket-Smith, 1953, p. 209; Heizer, 1956, pp. 79 f.). The conception that spirits had pointed heads, common in Siberia, may also have been known on the Northwest Coast, since an antler figurine from Locarno Beach I is so shaped (Borden, 1951, pl. i). However, Birket-Smith is too cautious to commit himself to speculative theories on this point. Shamans' dolls, in any case, did not necessarily reflect the owners' familiars, but were essentially inanimate figures (sometimes of animals or birds, or commercial dolls) into which the shaman might put his power and thereby cause them to move. This notion of animating objects by projection of shamanistic power is widespread in Siberia and North America, finding expression in such themes as the drum that beats of itself, objects that fly through the air during seances, or the Coast Salish "spirit boards" that drag their holders around the house. This idea may be the basis for the carvings of various sorts which are secretly manipulated by strings and which play such an important part in northwestern Alaskan Eskimo ceremonies and in the performances of central Northwest Coast secret societies. Human figurines from the lower levels of Kodiak with jointed, movable limbs suggest similar practices (Heizer, 1956, p. 56, p. 79). Corpse or skeleton marionettes, like those of the Nootka whale ritualist, may also be represented on Kodiak (in "Intermediate Levels") and Kachemak Bay III (de Laguna, 1934, pp. 43 f., 46, 113; 1956, p. 95; Hrdlička, 1944, fig. 40, p. 351; Heizer, 1956, p. 77).

Most southwestern Alaskan shaman's dolls, like the example described by our Yakutat informants, evidently combined the notion of portraying the familiar spirit of the shaman with the inanimate figurine which the shaman's power could bring to life.

WOODEN VESSELS AND BARK

WOODEN VESSELS

Fragments of two kinds of small wooden boxes or dishes were found at Old Town. The first type is represented by the oval bottom of what was apparently a cylindrical vessel (fig. 23, *c*), found just above the floor of House 9 in Old Town III. It measures 8.1 by 7.2 cm. in diameter, and is flanged to fit inside the wall of the box. Presumably the latter was a thin bent plank, to which it was fastened by the fine copper nails still present in the bottom piece.

The second type of box or dish is represented by fragments of at least two square or rectangular vessels on or just above the floor of the Storage House in Old Town III (fig. 23, *a*, *b*, *b′*). Both were small, the maximum dimensions apparently not exceeding 30 cm. On both, the side was a single plank, 1 to 1.2 cm. thick and about 6 cm. high, evidently grooved or kerfed and bent at three corners, the ends sewn together at the fourth. There were holes and a flange along the lower edge, so that the side could fit around and be pegged to the bottom piece. The side on one vessel was uneven in height, rising at one point, and this specimen may have been a dish rather than a box.

Wooden vessels like the second type from Old Town are characteristic of the Northwest Coast, but the rounded shape of the first is not, except for dishes, carved from one piece of wood. The Chugach, however, made both round and square boxes and dishes with a single bent plank for the side, and a pegged-in morticed bottom (Birket-Smith, 1953, fig. 27, pp. 57 ff.). The Yakutat specimens, taken together, resemble Chugach vessels more closely than they do those of their southern neighbors.

Square or rectangular boxes, with the side made of a single plank, are characteristic of the Northwest Coast and represent the most

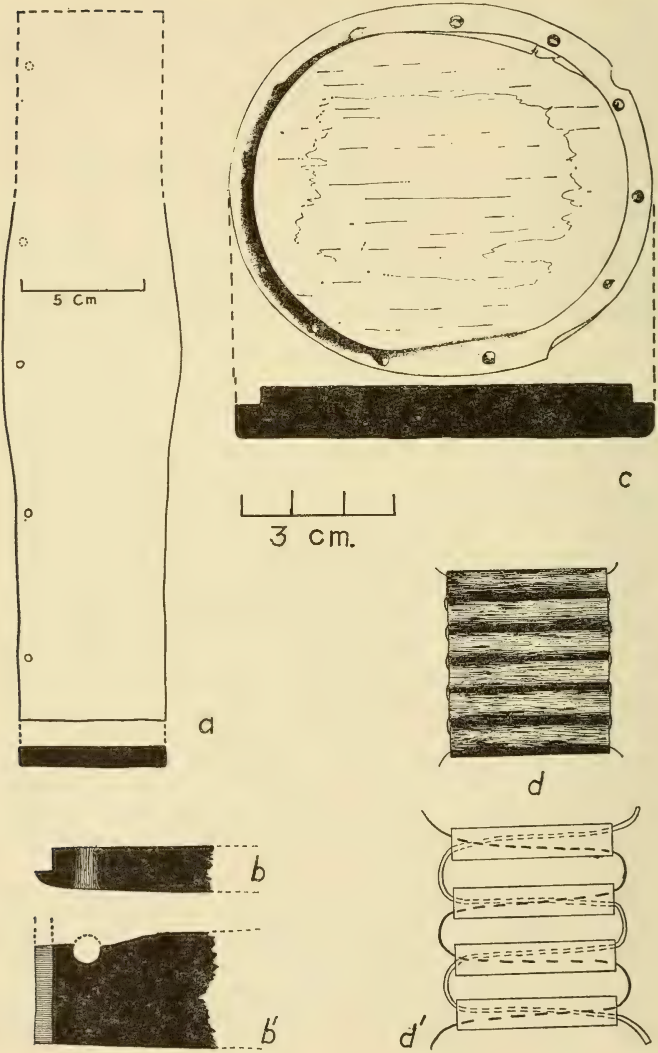
5 Cm
a
c
3 cm.
d
b
b′
d′

FIGURE 23
(For legend, see opposite page.)

technically advanced type, requiring straight grained wood and skill. Cedar is ideal for this purpose and was always used for such boxes, except that Chilkat (Drucker, 1950, p. 257) and Yakutat informants reported the use of carefully selected spruce. Tlingit, Haida, Tsimshian, and Kwakiutl boxes, especially those for holding liquids, had flanged, morticed bottoms (Drucker, 1950, Trait 449). Similar boxes were made at Yakutat in recent times, and one of the specimens from Old Town has this type of bottom, even though it is oval.

Very large boxes on the Northwest Coast were sometimes made with two or four separate pieces for the sides (Niblack, 1890, p. 319; Birket-Smith and de Laguna, 1938, pp. 413 f.). This type was easier to make than that with a single bent piece for the side, since it did not require skill in bending wood, nor such fine planks. Presumably, such boxes were also made at Yakutat, since they were by the Copper River Eyak and the Chugach, and are quite old among the Eskimo (Birket-Smith, 1953, pp. 57 ff., 202, pl. 26, *b*; Birket-Smith and de Laguna, 1938, pp. 78 f., 413 f.). Pegging or nailing was employed to fasten the sides of these boxes together, but the method typical of the northern and central Northwest Coast is to sew the parts together. The Coast Salish used both methods (Barnett, 1939, Traits 359–361, 365–367). Both are represented by the Old Town specimens and were reported by our Yakutat informants, although we gathered that pegging was more common.

The cylindrical vessel with a flat round or oval bottom, like that from Old Town III (fig. 23, *c*), may have been a still older type than any form of square-cornered box, for it is less difficult to make. The sides of such vessels are usually of pliable bark or baleen, or of thin wood which is easily bent after soaking in warm water. Cylindrical pails of this kind were made by the northern Alaskan Eskimo at least as far back as Birnirk and Old Bering Sea times, and have been reported ethnologically from the Pacific Eskimo, Aleut, Eyak, Tanaina, Tena, and many interior Athabaskan groups (Birket-Smith and de Laguna, 1938, pp. 413 ff.; Birket-Smith, 1953, p. 202). The ends of the side piece on such vessels are commonly joined by sewing, which may explain why the northern and central Northwest Coast Indians have adopted this essentially interior bark-working technique and adapted it to the manufacture of wooden pails and chests.

FIGURE 23.—Box fragments and band of grass. Drawn by Donald F. McGeein. *a*, Side of small wooden box or dish (restored), from floor of Storage House, Old Town II (No. 367); *b*, *b′*, fragment of a similar box or dish, same provenience (No. 367); *c*, bottom of wooden box or vessel with copper nails, from just above floor of House 9, Old Town III (No. 974); *d*, band of ryegrass stems, strung together, from floor of Storage House, Old Town II (No. 283); *d′*, diagram to show method of stringing *d*.

BARK

Two small fragments of birch (?) bark, one of which had been folded twice, were found in House 8, Old Town II. No birch grows in the Yakutat area, but birchbark baskets full of soapberries were sometimes traded from the Southern Tutchone at the head of the Alsek River. Both berries and baskets were considered a novelty at Yakutat.

Two pieces of spruce (?) bark were found on or near the floor of House 9 in Old Town III. They may have been part of the roof, or of some big container such as the large sheets of spruce bark which were set on posts above the fire as pans in which to cook berries for storage.

CORDAGE, BASKETS, AND TEXTILES

CORDAGE

There are seven carbonized pieces of two-ply Z-twist cords, from 2 to 8 mm. in diameter, probably made of spruce root. Six were on the floor of the Storage House, as was a knotted length of spruce root (?), and the seventh was from the fill of House 8.

Examples of two-ply S-twist sinew (?) thread or string, about 0.5 mm. in diameter, were preserved on the stem of an arrowhead from Old Town II (pl. 14, *b*) and on two copper hooks from Old Town III (fig. 18, *j*).

Informants mentioned heavier ropes or cords of spruce roots, ropes of untanned seal and sea lion hide, fishing lines of kelp, and braided square sennit cords of porpoise sinew for bowstrings and harpoon lines. Thread of porpoise sinew was used for sewing garments.

TWINED BASKETS

Carbonized fragments of several fine, twined spruce root baskets (pl. 18, *a*) were found on or just above the floor of the Storage House in Old Town II. The direction of twining is downward from left to right; the fragments vary from about 6 warps and 8 wefts per square centimeter to 9 warps and 10 or 11 wefts. Salmonberry seeds were found with one of the coarser baskets, suggesting that it had been used to gather or store berries. The finer baskets were decorated with false embroidery, a technique in which the northern Tlingit excel (Mason, 1904, pp. 308 ff.). "The Yakutat have always held first place in basketry," and legend credits them with the origin of this art (Emmons, 1903, pp. 229–231). Yakutat women claim that their baskets were superior because they held the weft strands tight with their teeth while weaving, whereas other Tlingit women used only their fingers (sic).

Baskets of a variety of shapes and weaves were formerly made. Those designed to hold liquids were soaked and then rubbed on the inside while still damp with a brown bear canine, which polished and flattened the strands, making the weave watertight. A bear canine (pl. 16, *i*), found on the floor of the Storage House, was probably used for this purpose, for there is a worn facet in the enamel and both edges of the root have been cut flat.

There is nothing about the archeological basket fragments to distinguish them from modern baskets of the Yakutat and other northern Tlingit (cf. Niblack, 1890, pl. XXXVI). The Haida make similar baskets, except that among them overlaid designs are said to be recent. Decorated twined baskets are not found elsewhere on the Northwest Coast until we reach the Makah (and the Nootka who have recently copied them), but their baskets are rather different from those of the Tlingit. Twined, decorated baskets are, of course, made by many southern Northwest Coast tribes, including the Coast Salish and northwestern California groups.

In southwestern Alaska, the Copper River Eyak, Chugach, and Tanaina also made baskets of Tlingit type, similarly decorated, and the Koniag made some twined baskets. The finest work was done by the Aleut, although their baskets were of grass and different in design. Twined baskets were also made sometimes north of Bering Strait (Birket-Smith and de Laguna, 1938, pl. 14; Birket-Smith, 1953, fig. 28; Osgood, 1937, pl. 10, *A–C*). This type of basketry has a circum-Pacific distribution, while coiled baskets occur in areas beyond its limits. Unfortunately, archeological specimens are too seldom preserved to give clear evidence of the antiquity or sequence of types in any given area. However, twined basketry with false embroidery is found from southern Oregon to the Columbia, with radiocarbon dates indicating an age of 9,000 years. Except for the materials, it resembles Tlingit work very closely, and Cressman (1960, p. 73) reports that he saw the same kind of basketry in Heizer's collections from Kodiak. Fragments of rather coarse, open twined baskets, as well as of coiled baskets, were found in the Platinum Village site in Bristol Bay (Larsen, 1950, fig. 57, *1–4*). This site seems to be older than others in the area with pottery, and the material from it shows similarities to both the Near Ipiutak of Point Hope and the lower levels of Kachemak Bay. All available evidence, therefore, suggests great antiquity for twined baskets on the Northwest Coast.

MATTING

A fragment of twined grass (or shredded bark?) matting was found on the floor of the Storage House. Our informants had heard that shamans used such mats in their seances, but could not describe them. At a still earlier period, mats were undoubtedly used for ordinary domestic purposes. The weft elements of this mat are about

1 cm. apart and are twined upward from left to right, so that it is identical with specimens from late prehistoric burials of the Chugach, Aleut, and Tena, as well as with the sleeping and kayak mats of the modern Kuskokwim-Kotzebue Eskimo (de Laguna, 1947, pls. XIX, XX; 1956, pls. 52 and 53; Oswalt, 1952, pl. 18, *A*, *B*). The undecorated grass mats on the walls and floor of the Eyak sleeping room may well have been the same (Birket-Smith and de Laguna, 1938, p. 34). Coarse twined grass mats were found on the floor and sleeping platform of a burned house at the Platinum Village site in Bristol Bay (Larsen, 1950, p. 184). Twined cedar-bark mats are common on the Northwest Coast (Drucker, 1950, Traits 718, 733, etc.). In general, twined mats, used for bedding, seats, and for shrouds, have a very wide distribution in both the Old and New Worlds, and the oldest direction of twining seems to have been up from left to right (de Laguna, 1947, pp. 217 ff., 272).

BLANKETS

The geometric patterned woolen blanket, known at Yakutat in early historic (and late prehistoric?) times (see pp. 171 and 196), is an obvious link with the Tlingit of southeastern Alaska. According to our informants, a number of Yakutat women knew how to make Chilkat blankets of conventional, modern type with representative crest designs, since they had at one time been "married into Chilkat." There was no specific reference to pattern boards which they may have used; certainly there is none at Yakutat now.

The knowledge of weaving blankets may have extended even farther northwest than Yakutat. Thus, Captain Cook (1785, vol. 2, p. 368) who visited Prince William Sound in 1778 reported "one or two woolen garments like those of Nootka." Strange (1928, pp. 42 f.) also said that the Chugach in 1786 had thick warm woolen blankets, but valued them too highly to sell any. He bought the skin of the animal from which it was obtained, and described it as very similar to a sheepskin. In a report by Potap Zaikov, who explored Prince William Sound in 1783 (Tikhmenev, 1863, App., p. 6 [2]), the Russians observed ". . . a blanket made of white wool, similar to sheep's wool, plaited and fringed. The blanket was ornamented with yellow and coffee color." Our Chugach informants, however, believed that it was not until after the arrival of the Russians that they themselves learned how to weave goat wool blankets (Birket-Smith, 1953, p. 64). In 1884, Abercrombie noted that the Eyak slept under woven goat wool blankets about a yard wide and 5 feet long, but our informants denied that the Eyak knew how to make them (Birket-Smith and de Laguna, 1938, pp. 43, 70).

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[2] Translation by Ivan Petroff. Permission to quote this passage has been given by the Director of the Bancroft Library, University of California at Berkeley.

The lack of specific mention of designs on Chugach and Eyak blankets and the description in Tikhmenev suggest that they were either plain or had only simple geometric patterns, like that of the Yakutat blanket, for surely anything resembling the elaborate crest patterns of modern Chilkat blankets would have been remarked. On the basis of her detailed study (see pp. 187 ff.), Carolyn Osborne recognizes a northern center for woolen blankets with geometric designs.

MISCELLANEOUS WORKED BONE, STONE, AND WOOD

WORKED BONE

A flat piece of bone from Old Town III, (7.5) cm. long and 1.9 by 1 cm., may have been the handle of a tool. There is a shallow cut across one face near the unbroken rounded end. Another possible handle is a flat piece of seal (?) bone, (9.2) cm. long, 2.3 by 1.2 cm., from Old Town II. It is ground on several sides; one end is rounded and smooth, the other broken. A somewhat similar worn bone fragment from Old Town II, (4.7) cm. long, has a hole through the rounded end. Also from Old Town III is a cut section of animal rib, 7.8 cm. long, with one rounded end; the other is damaged. This also may have been a handle.

A flat piece of whalebone from Old Town III has been whittled into a disk, 1.8 cm. in diameter and 1.2 cm. thick (for a top?).

In addition, 28 nondescript pieces of bone, most of which appear to be workshop debris, show that bones were split by cutting grooves in one or both surfaces and that bone was also shaped by adzing, whittling, and grinding. Two pieces from Old Town II are the articular ends cut from animal long bones.

The distribution of these pieces is: 1 from Canoe Pass, 15 from Old Town III, 15 from Old Town II, 2 from Old Town I, and 3 from Old Town, level unknown. It should be noted that these worked bones include fragments of whale or porpoise bone, mostly from Old Town III, of large mammal (bear? and mountain goat), of small mammals, and of birds.

CHERT CORES, NODULES, AND CHIPS

Three cores of green chert, two about the size of the fist, from which flakes were struck by direct percussion, are from Old Town III, and another core is from an unknown level. Three nodules of green chert, about 3 by 4 cm., struck from larger pieces, are from Old Town III.

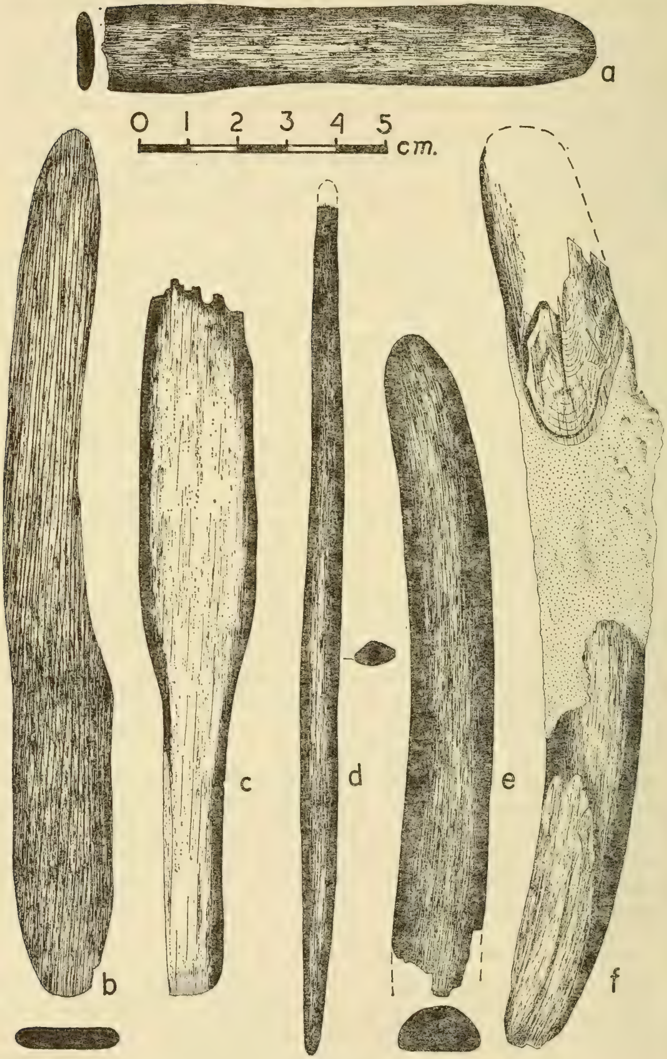
a
0 1 2 3 4 5
cm.
b
c
d
e
f

Figure 24
(For legend, see opposite page.)

Some 45 chips of chert, mostly green in color, range in length from 1 to 6.5 cm. A few might have been used for scrapers or knives, but most seem to be the debris of manufacture. We do not know what was being made, however, since the few finished artifacts of flaked stone include no specimens of chert. The proveniences of these flakes are: 4 from Old Town III, 2 from Old Town II, 1 from an unknown level, and all the rest from Old Town I, including the upper and lower levels of Mounds C and D and of the fill in House Pit 7.

Thus, of 52 pieces of worked chert only 9 came from Old Town III, 2 from Old Town II, and 2 from an unknown level in Mound B, showing that the flaking of chert, whatever the purpose, had become virtually obsolete by the period represented by Mounds A and B.

WORKED QUARTZ, GREENSTONE, AND SLATE

From Old Town III is a flake of quartz, 4.8 cm. long, which could have been used as a knife or scraper.

In addition to the fragments of adz blades, already described (p. 95), there are 6 flakes of greenstone. One is from Diyaguna'ᴇt, one from Old Town III, three from Old Town I, and 1 piece from Old Town, level unknown. The last could have been used as a scraper.

Of chipped and ground slate, a piece from Little Fort Island may have been intended for a knife blade. The proveniences of other fragments are: one from Old Town III, one from Old Town II, and three from Old Town I.

MISCELLANEOUS WOODEN OBJECTS

In addition to the artifacts described elsewhere, many pieces of carbonized wood were found, chiefly in the burned houses. These are mostly fragments of firewood, workshop chips or splinters, a few of which show the marks of adz and knife but only 10 appear to have been purposely shaped.

Among the latter, there are two slender wooden pins, well made and polished. One (fig. 24, *d*), pointed at both ends and 17.5 cm. long, is from the Storage House in Old Town II; the other (fig. 15, *c*), from Old Town III, is now broken, but was evidently pointed at one end. A more roughly made pin, originally over 30 cm. in length, came from House 8 in Old Town II.

Figure 24.—Wooden objects. Drawn by Donald F. McGeein. *a*, Spatulate object, from floor of Storage House, Old Town II (No. 388); *b*, wooden blade, from below floor of Storage House, Old Town II (No. 423); *c*, spatulate object, from below floor of Storage House, Old Town II (No. 429); *d*, wooden pin, from just above floor of Storage House, Old Town II (No. 256); *e*, fragment of bidarka rib (?), from floor of Storage House, Old Town II (No. 399); *f*, cut branch, from floor of House 9, Old Town III (No. 658).

A stick (fig. 16, *d*), 42.5 cm. long, has been trimmed smooth, and both rounded ends are beveled from one side. It may have been used to spread fish for drying or cooking.

There are four spatulate wooden fragments, also from the Storage House. One (fig. 24, *c*), now (14.4) cm. long, has a series of finely incised chevrons on the flat blade near what appears to be the handle (on the side not illustrated). This may have been a paddle for beating up soapberries, an imported delicacy. Another (fig. 24, *b*), looking like an asymmetric wooden knife, 17.8 cm. long, suggests the implement used for eating sea urchin ovaries. A third may have been intended for a wedge, although it shows no signs of wear. The functions of the other two specimens (fig. 24, *a*) cannot be guessed.

There is also a section of a slightly curved branch (fig. 24, *f*), now (18) cm. long and 2.5 cm. in diameter, which has been cut with a sharp metal (?) knife. Both (?) ends were originally bluntly pointed. It was found in a litter of charred shavings, twigs, and moss on the floor of House 9 in Old Town III.

The proveniences of the other pieces of worked wood are: 15 from Old Town III, and 37 from Old Town II. Some of the larger pieces were sent to Dr. J. Louis Giddings, at the Haffenreffer Museum of the American Indian, Brown University, with the hope that these, together with borings from livings trees in the area, might furnish materials for dedrochronological dating. The samples were, however, insufficient. Other pieces of wood were given to Miss Elizabeth Ralph, in the Department of Physics, University of Pennsylvania, for radiocarbon dating. We are extremely grateful to her for the results reported below (p. 206).

CANOES

There are two bluntly pointed, slightly curved wooden sticks (fig. 24, *e*), flat on one side and rounded on the other. One from the Storage House in Old Town II is (13.4) cm. long; the other, smaller fragment is from House Pit I. It is possible that these were pieces of ribs for bidarkas or kayaks, since they resemble some Chugach specimens (de Laguna, 1956, p. 247), and our Yakutat informants reported that their ancestors long ago used sealskin canoes. These included large boats like umiaks, one-hole kayaks, and two-hole bidarkas. Obviously, there could never have been a complete boat in the Storage House.

While the ethnographic evidence (cf. de Laguna, 1963) is sufficient to establish that the prehistoric Yakutat once made skin boats like those of the Chugach, this cannot be said of the Tlingit, with the possible exception of the Chilkat. However, the skin canoe used by the latter for crossing lakes when on trading trips to the interior, had a covering of moose or caribou hide, not of sealskin (Drucker, 1950, Trait 390, p. 254), and was probably, therefore, of Athabaskan type; it was paddled, not rowed. The Chilkat tradition that they once had only skin boats, "before they knew there were other people living to the south and west on the coast," is also suggestive of an interior origin.

While the Yakutat themselves made or purchased from their southern neighbors several well-known Northwest Coast types of dugout, they made two distinctive types of their own. The forked-prow canoe for the open sea or swift currents was made only by the Eyak-speaking Gulf of Alaska Indians, from Yakutat to the mouth of the Copper River; the canoe with spoon-shaped bow and ram for sealing in the ice floes was made only at Yakutat and Icy Bay. We are inclined to consider dugouts as peculiar to the Northwest Coast, so it is important to remember that they were made by the Chugach, Tanaina (the latter possibly in imitation of the Kenai Peninsula Eskimo), and even by some of the northern Koniag, although among these peoples the dugout was never as common as boats of other kinds (de Laguna, 1956, pp. 241 ff.).

While the dugout is the modern type of craft on all the Northwest Coast, Borden (1951, pp. 46 ff.) had argued that the ancient inhabitants of Whalen Farm I and Locarno Beach I and II must have hunted seal and porpoise from skin canoes because they lacked antler wedges, pestle-shaped hand mauls, and large adz blades—tools which he believed were essential to making dugouts. Although the presence of such implements does indicate a well-developed woodworking industry, their absence cannot prove that boats were made of skin, not of wood, since the modern Coast Salish fell trees by burning or chiseling with a relatively small adz (Barnett, 1939, Traits 571, 572), and the Tlingit, at any rate, shape their dugouts with a small planing adz and crooked knife. This question has been further discussed by Osborne, Caldwell, and Crabtree (1956, p. 121). However, we should also note that Borden (personal communication) believes that the dugout was made in the Marpole Phase, which was in large part contemporaneous with that of Locarno Beach. Probably the question of boat types on the southern Northwest Coast in the most ancient days is not yet ready for solution.

THE YAKUTAT BLANKET

By Carolyn Osborne[3]

The blanket remains which were recovered from a shaman's grave on Knight Island, Yakutat Bay, were cleaned between two frames of plastic screening with sprayed detergent suds and clear water. Even though unfolding was done carefully the largest fragment measures a very ragged 10½ (warp) inches by 12½ (weft) inches. This fragment, which is apparently from the main body of the robe (or ceremonial blanket), contains neither warp (top and bottom) nor weft (side) selvages. Fragments of both warp (top) and weft (side) selvages do exist, but I was unable to piece these to the other fragments to give continuity of design or weave or to give an indication of size of the blanket. There can be no doubt that all of the fragments belong to a single blanket. The many fragments have been placed with a high degree of accuracy, in the following order: i.e., the heavy geometric-patterned twined fragments with the fur binding as top selvage; the twilled-twined gold or yellow with the concentric rectangles of dark brown and with multiple tassels as the main body of the textile; the heavy warpwise-twined rows and the attached fringe and the wrapped bundles as side border. One fragment of this side border had a section of three-strand braid attached (?) to it; it may possibly have been part of the lower border.

DESCRIPTION

Materials.—Samples of the various yarns (warp; light-colored weft; decorative yarn used both weftwise and warpwise; tassels; fur edging) were sent to the laboratory of the Federal Bureau of Investigation, which very kindly consented to identify the fibers used in this and other local aboriginal textiles. Their findings are as follows:

Warp yarn: Goat (includes mountain goat) dyed light brown. [There is a possibility that this might be burial staining; it seems probable that the original color was either natural white or light yellow.]

Weft yarn: Goat (includes mountain goat) dyed light brown. [This is the same color as the warp yarn.]

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[3] I wish to express my gratitude to the following: Mr. J. Edgar Hoover, who directed the laboratory of the Federal Bureau of Investigation to identify the fibers; Dr. Kaj Birket-Smith, who supplied photographs of the Copenhagen blanket; and the Portland Art Museum for lending the Tsimshian blanket from the Rasmussen Collection. This paper was read, in part, at the 1957 meetings of the Society for American Archaeology, in Madison, Wis. After this reading Dr. Arnold Pilling kindly sent me his notes on the original catalogs of the Cook and Vancouver Collections in the British Museum.

Tassel of blanket and decorative yarn: Goat (includes mountain goat) dyed dark brown.

Side border decorative yarn: Goat (includes mountain goat) dyed dark brown.

Fur edging: Otter (*Lutra*[4]) or sea otter (*Enhydra*) natural light brown to dark brown.

The warp yarns are two-ply, Z-twist (singles S-) approximately one-sixteenth of an inch in diameter; loose to medium degree in twist. They are invariably light colored. Warp yarns were set up 14 to the inch and were used in pairs or fours; never singly. The light weft yarns, which form the background color of the blanket, are also two-ply Z-twist as is the warp, but are smaller in diameter and somewhat harder twisted. The dark-brown decorative yarn and fringe yarn is considerably smaller in diameter (a minimum of one-thirty-second of an inch); it is also two-ply Z-twist and medium to hard in degree. The dark-brown side border decorative twining yarn is approximately one-eighth of an inch in diameter; two-ply Z-twist and usually hard twist. The attached fringe at the side selvage is light colored, two-ply Z-twist about one-eighth of an inch in diameter.

Technique.—As previously mentioned, there are fragments of three or possibly four sections of weaving, of distinctive design and technique. Five fragments of the top border of the blanket are present, of which two show the complete complex of techniques (pl. 19, *a*). The larger of these measures 5¼ inches long (warp) by 6¾ inches wide (weft); this fragment and the next larger have portions of the top selvage and fur. The warp, as is common for the suspended-warp weaving of all Northwest Coast blankets (with the exception of the Salish which were ring-woven on a tension bar loom) was doubled at the top over a heavy loom cord, and secured with an inital row of plain twining. This row of twining was covered with the otter or sea otter fur band (hide and fur) about 1 inch wide, which was folded over the top edge so that it appears equally on both sides, and sewn. All of the twining in the blanket is carried over paired or quadrupled warps. The pitch of the background weave of the light-colored wefts, of the weftwise decorative twining (three-strand), and of the vertical decorative wefts (three-strand twining) is invariably up-to-the-left. This is in contrast to the elaborate stylized naturalistic Chilkat blankets in which change of direction of pitch of twining may be used to emphasize design breaks and changes.

The sequence of the twining rows from the first weft working downward is: two rows of plain twining over paired warps; five rows of twilled-twining over paired warps; one row of three-strand dark-brown twining; 10 rows of twilled-twining over quadrupled warps.

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[4] In view of the horror which the modern Tlingit and Eyak have of the land otter and the taboo against wearing its fur, we may assume that this was sea otter fur.—F. de L.

The pattern then proceeds into a geometric zigzag design of dark-brown and light-brown wefts. There is no "eccentric" wefting in this section as is common in the Chilkat blankets; all of the wefts are at right angles to the warps. In all of this zigzag section, the weaving is accomplished with one light twining element and one dark. The pattern is therefore reversible; when the light appears on one surface, the dark forms the identical pattern on the reverse. Of necessity, in this zigzag design, therefore, the twining proceeds on a twill-line over paired warps (see fig. 25, *a*). Between each rectangle of the bold zigzag design are four vertical bands, one-half of an inch wide, alternating light and dark wefts. In the fragments preserved, there is not one of the complete rectangles of the zigzag design; their width is uncertain. The maximum of width of the zigzag block of any fragment, which is therefore a minimum for the design, is 5¼ inches. The warp length of the design band, which is complete in several fragments, is 2½ inches.

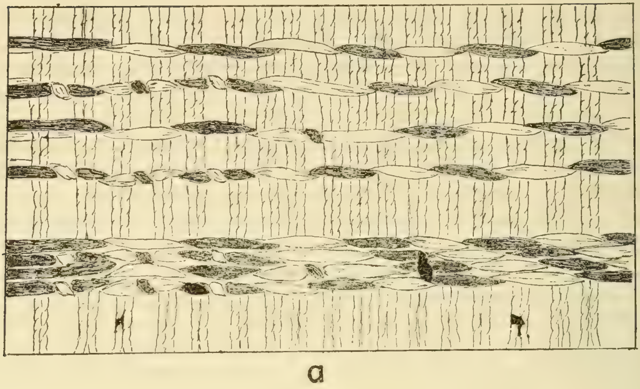
Unlike the Chilkat blanket weaving in which short pieces of weft yarns were inserted in the design pattern and locked with the adjoining wefts, all of the wefts in this textile proceed from selvage to selvage and were woven directly across the entire width, forming the zigzag designs and the vertical bars as these design elements appear in turn.

Warp count throughout the blanket is 14 to the inch, used primarily in pairs. The Chilkat blankets often had warps added to aid in shaping the blanket to a curved shape. There was no evidence of added warps in the fragments of the Knight Island blanket.

The weft count in these top fragments is 32 single wefts used in pairs (i.e., 16 weft courses or rows) an inch.

At the base of this bold pattern is a single row of dark three-strand twine, followed by four rows of the twilled-twining of the light-colored wool; another single row of dark twining, three-strand; and two-rows of light twilled-twining. At the very bottom of one of the fragments, following the above series of twined rows, is a row of twining showing two light wefts and contiguous to these two dark wefts. These may well indicate that there were originally two complete rows of the horizontal bands of zigzags and bars. No more than this hint was present.

The fragments of what appear to be the main body of the blanket are more numerous than the top border pieces. Completely cleaned and in good enough condition to be teased apart for thorough analysis were four large fragments, the largest of which is 10½ by 9¾ inches. It is exceedingly unfortunate that none of this series could be fitted to the preceding pattern section. This portion of the blanket is primarily light wefted with designs of concentric rectangles of a deep reddish brown (pl. 19, *b*). The basic weave is twilled-twining



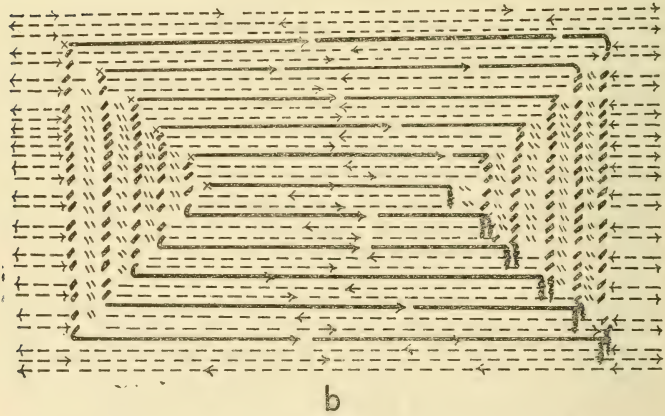


FIGURE 25.—Diagrams of weave of Chilkat blanket from shaman's grave, Knight Island, Yakutat Bay. (Not to scale.) *a*, Zigzag top portion of the Yakutat blanket, drawn by Arlie Ostlie; *b*, One set of concentric rectangles of three-strand dark wool on light-colored weft, central part of the Yakutat blanket (arrows indicate directions of yarn movements), drawn by Irene Brion from sketch by Carolyn Osborne.

over paired warps. There are 8 courses or rows of wefts to the inch indicating 16 weft yarns. The decorative rectangles are accomplished in three-strand twining in which the yarns follow the outlines warpwise and weftwise (fig. 25, *b*); the three yarns needed for the rectangle were measured, halved and inserted at the midway point at the upper left-hand corner of each rectangle. At this point one-half of the length is twined across the warps to form the upper line of the rectangle; these yarns, then, round the corner and, as the light wefts of the basic twined background reach this vertical line of twining, are twined around them (the wefts) to form the right side of the rectangle. Simultaneously, the second half of the length of yarns was being twined over the light basic wefts as these were met, and after rounding the lower left corner, crossed the warps to complete the lower side of the rectangle. At the lower left corner, the three yarns of each half were braided for about 1½ inches, knotted and permitted to fall free as a tassel. The longest tassel yarns in place are 7 inches long. The complexity of the meetings of the basic weft and decorative yarn is increased by the fact that there are five concentric rectangles and a single center line. All of the vertical lines were inserted during the weaving process. None of them is embroidered as are many of the vertical lines in the stylized Chilkat blankets (in which the overlaid three-strand yarns cannot be seen from the reverse side of the fabric). The complications of the selvage to selvage wefting of the light yarns with the addition of the design elements during weaving is indeed a tribute to the skill of the weaver. At one stage she manipulated the basic weft to the outer vertical line; here these light-colored wefts act as warp to the dark-brown decorative yarns; then they are light wefts again for two warp pairs; then again they act as warp for the next concentric rectangle. At 10 places across each group of rectangles, the light wefts were released to be the passive element as the dark-brown yarns were lifted to be twined around them. Each of these wefts moved through many such rectangles to the opposite selvage, there to turn around the end warp and begin the return in the opposite direction. None of the rectangles is complete in the fragments preserved. However, two fragments contain enough of the interior rectangles so that the length (warpwise) of 2¾ inches and width (weftwise) of 4⅞ inches for the outer lines can be considered accurate. As each of the concentric rectangles ended in a self tassel, the blanket must have been well fringed.

Each of the three large fragments contains portions of three rectangles, two of these on the same horizontal line and one on the next vertical line above or below the others. The rectangles were apparently distributed across the width of the blanket spaced 3 to 3⅞ inches apart (distortion of the blanket may account for some of this discrepancy). Between the rows vertically (warpwise) the space was apparently 3½ inches. The rectangles were not staggered; the top decorative lines of the rows of rectangles were inserted on the same weft line, and the vertical lines inserted between the same warps.

There is no way of knowing the total number of rectangles in the blanket.

There are four fragments of side border, of which one may possibly be a lower fringe corner as well. The largest of these measures 5 inches long by 2 wide. The weft yarns, on reaching the edge of the blanket, turn on the outside warp and begin the next course below. The two outer warps are only slightly larger than the main body warps. Alternate rows begin the twilled-twining by (*a*) twining between warp 1 and warp 2, joining warps 2 and 3, and then proceeding to double-warp twilled-twining and (*b*) twining between the single warps 1, 2, and 3, to double warps 3 and 4, etc. Around each of the (*b*) rows is attached the extra fringe of mountain goat wool; the larkshead knot, with two cut ends, which forms the fringe is tied around the first warp, embracing the (*b*) row of twining. This fringe is now, at its longest, about 3 inches. The yarn is the light-colored mountain goat wool, two-ply Z-twist and as fine as the weft.

Working inward from the selvage, between the third and fourth warps is a single vertical row of three-strand twining with fine dark-brown yarns. The next 15 warps are twined with the light weft yarns, but inserted between warps 18 and 19 is a very heavy (three-sixteenths of an inch wide) vertical row of three-strand dark-brown twining. Both of these are woven into the wefts as the weaving proceeded to their longitude, even as the vertical lines of the rectangles.

Immediately joining the heavy twined row (this connection has since broken) is a group of seven wrapped bundles. This wrapping resembles a loose coiling or sewing, inserted here in a vertical position. I cannot picture it in the blanket; there is no counterpart in ethnologic or known specimens, and these fragments were too disintegrated to provide an answer. I can only surmise that they functioned as the plaited bands which reinforce the sides of the Chilkat blankets. Nothing of its sort is present on any of the geometric blankets known.

COMPARATIVE DATA

The analysis of the blanket fragments may be summarized as follows for comparative purposes:

1. Warp and weft and decorative yarns are entirely of mountain goat wool.
2. The construction is entirely twining: two-strand and three-strand.
3. All of the twining wefts (excluding the dark rectangles in three-strand twining) pass from selvage to selvage of the blanket.
4. Decorative three-strand wefts were woven into the blanket; there is no surface embroidery.
5. Tassels of integral yarns suspend from some of the decorative elements.
6. A fur border was sewn to the top of the blanket.
7. Side selvages had an attached fringe of mountain goat wool yarns.

8. The design is entirely geometric.

9. Two colors only were used in the blanket; a light yellow or gold and a dark reddish brown. It is, of course, possible that there was also the natural wool used, but I could see no shading of the light-colored yarns.

10. All wefts cross the warps at right angles; there is no eccentric wefting.

There are actually only two ethnological specimens which are comparable to this archeologic blanket; and one ethnologic fragmentary specimen.

The first of these is the comparatively well-documented "Swift" blanket described by Willoughby (1910, pp. 1–10). Of the 10 above-summarized techniques and qualities, the Swift blanket shares 7 with the Yakutat fragments: 1, 3, 4, 5, 6, 8, and 10. The Swift blanket exhibits the wrapped lattice twining (Willoughby, 1910, p. 5, fig. 4) which is widely used in the Chilkat weaving but is not present in the fragments of the Yakutat blanket. This type of weaving involves weft yarns which show on one surface only. Both the Swift blanket and the Yakutat blanket exhibit a closely comparable weave: the vertical bands which divide the zigzag sections of both blankets involve two wefts of different colors, one of which provides a temporary lattice for the other. The yarn which acts as lattice for one colored band is the twining element for the alternate vertical band. This may be resolved as a matter of tension on one of the twining elements. This reversibility of design is not a regular feature of Chilkat blankets. It is seen occasionally in very small areas of design, such as the teeth motifs.

The Swift blanket has side fringes which are extensions of the weft yarns; the Yakutat blanket has added yarns for the side fringe. Neither exhibits the braided or plaited band of the Chilkat blankets.

The Swift blanket uses three colors: two dyed and an undyed natural white wool. The yellow and the dark brown are comparable to those of the archeologic specimen; as I have stated, it is difficult to be certain of the light color in the Yakutat blanket, but no variation in the light-colored wefts can be seen.

There can be almost no closer design elements than the alternate zigzag and bars of the Swift blanket and the ones described above; the weaving technique of the bars is certainly similar and that of the zigzag identical (Willoughby, 1910, fig. 4, *b*). The design of concentric "lazy" H's of the Swift blanket is very like the concentric rectangles of the Yakutat blanket, and the tassels pendent from the lower right-hand corner of the design appear in both specimens. The Swift blanket seems to have, in addition, tassels pendent from the bold geometric diamonds. These are braided and may or may not be integral weft yarns.

In general, the Swift blanket is more complex in design than is the

Yakutat blanket. This complexity is accomplished, however, with the addition of only a single technique: the double wrapped lattice twining which appears only in the borders of that blanket.

The Swift blanket was collected about 1800, without provenience, although Willoughby considered it to be a northern British Columbia coast product. I would consider it, in view of the subsequent remarks, to be from farther north.

Willoughby (1910, p. 8) notes that there is a dilapidated sample of a geometric-patterned blanket in the British Museum collected in about 1793. Kissell (1928, fig. 2 and p. 118: her text has the figure numbers reversed; figure 3 is the Ottawa blanket illustrated by Emmons, 1907, p. 388, and by Willoughby, 1910, pl. 2) states that this blanket was probably collected by Vancouver somewhere between Prince Frederick Sound and Lynn Canal in 1794. I have at hand a series of notes from Arnold Pilling on the following manuscripts:

Hewett, George Goodman: "Vancouver Voyage, Hewett Coll^{n}." British Museum Ethnological Document #1126. Manuscript catalogue written during the Vancouver Expedition, 1793–1794. Original document in the British Museum.

The following entries are noted:

115	Namakizat	Shoulder piece.
110	-----do	Bark garment.
111	Mowachut or Nootka Sound	Bark and wool garment.
267	Rock Village	Garment.

None of these, it seems to me, can identify the British Museum specimen. However (also in the notes taken by Arnold Pilling), there is mention of two blankets collected by the Cook Expedition in 1778 and presented to the Museum in 1789 by Joseph Banks. These specimens are:

NWC 49	Cloak of woven fibre with heavy fringe of rough fibre and twisted cord intermixed.
NWC 51	Robe of brown and white twisted cord of a woolen material woven in a diamond pattern: wool of the mountain goat.

There is no way of determining the age of this catalog or whether it is Banks' original notes or notes made by later museum workers. However, I am satisfied that item NWC 51 is this fragment, and that it was probably collected by Cook in 1778. It seems likely that Miss Kissell assumed that it was collected by Vancouver because his journals describe a native of the Lynn Canal wearing a robe of this description.

Neither Kissell nor Willoughby states that this blanket is of pure mountain goat wool (though the catalog notes indicate that it is). From the fragment pictured by Kissell I would state that this fragment shares characteristics 1, 2, 3, 7, 8, 9 and 10 with the Yakutat fragments. There are no sections of top border pictured and it is possible that elsewhere in the blanket there are design elements of three-strand twining. Its boldness relates it to the Copenhagen blanket. It shares the zigzag patterning with all the others. The illustration shows no tassels. What is most interesting is the suggestion of wrapped bundles at the lower border. A detailed analysis of this blanket fragment is certainly a desideratum.

A third known blanket, very inadequately described, is illustrated by Boas (1951, pl. 10) and is a part of the collections of the Ethnological Museum at Copenhagen. This blanket was formerly part of the Leningrad collections and was acquired by early Russian explorers on the coast. It seems possible that it could have been collected by Lisiansky, who described Indians wearing tasseled blankets at Sitka (Kissell, 1928, p. 117) in 1805. Dr. Birket-Smith very kindly sent photographs of the blanket (Museum No. K.c.119) including enlargements of details. Its overall similarity to the Yakutat blanket and the Swift blanket is very apparent. The horizontal diamond bands and the zigzag bands are of the same temporary-lattice type twine weave as has been noted for both of the preceding blankets. It would seem to share characteristics 1, 2, 3, 7, 8, 9, and 10 with the Yakutat robe, lacking only the fur binding and decorative three-strand twining. The tassels appear to be inserted yarns. Its design elements are bolder in overall pattern than either the Yakutat or Swift blanket; it lacks the lighter design of concentric rectangles or "lazy" H's.

In all three of these blankets the zigzag designs are separated by vertical bars. The Swift and Copenhagen blankets share the horizontal diamond pattern. The British Museum specimen has a zigzag border both horizontal and vertical, as do the Copenhagen and the Swift. This pattern does not appear to have been present in the Yakutat blanket, but, of course, the fragmentary condition of the specimen does not permit a positive statement of the absence of the pattern.

Only the Yakutat blanket has wrapped bundles. None of the four has the sewn-on plaited band or bands of the Chilkat blanket.

A blanket which stands as unique up to the present is the often-illustrated cedar-bark and wool blanket (Emmons, 1907, pl. XXIV, 1; Boas, 1951, pl. XI) in the British Museum. It would seem that this cape or blanket [5] is probably the "111" of the Hewett Collection of the Vancouver Voyage (see Arnold Pilling's notes, mentioned above, p. 194):

111 Mowachut or Nootka Sound—Bark and wool garment.

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[5] All-cedar-bark garments are commonly called capes, while the wool and wool and cedar-bark garments are generally referred to as blankets. The term "cape" is certainly more accurate in a functional way.

It resembles the fine cedar-bark capes of the Nootka in its open space twining. It lacks the heavy rolled and plaited side binding of the specimens that I have observed in the Washington State Museum, and it has the addition of mountain goat wool in a twined geometric upper and lower border. It is also deeply fringed at side and bottom. The geometric patterning is simpler than in any of the previously discussed blankets and the lack of a photograph from the reverse side leaves us with no indication as to the type of weave.

All of the blankets discussed have been assigned to the same general period. The earliest would seem to be the 1778 (?) collected British Museum fragment. The archeologic specimen (Yakutat) could date from the 1780's. All the rest were collected before or at the turn of the 19th century. The only one of the blankets with known provenience is the blanket from the shaman's grave on Knight Island in Yakutat Bay. With, however, the added information that Vancouver saw a tasseled blanket at Lynn Canal and Lisiansky saw Indians wearing tasseled blankets at Sitka, I submit that it fixes the geographical provenience of the all-wool geometric-patterned blanket as the northern coastal area of southeastern Alaska. All of these predate any specimens known as "Tsimshian"; and all fall in Tlingit territory.

The earliest known garment of mixed cedar bark and wool comes from a more southern location—Nootka—but dates (if my assumption about the Hewett collection of Vancouver Voyage is correct) from approximately the same period—i.e., the 1790's. It also exhibits geometric patterning.

All of this patterning is evident in the fine twined basketry of the Tlingit and other Northwest Coast tribes, and also of the Aleut. It would seem to me that, in the earlier aspects of weaving, wool blanket weaving was, like basketry, a woman's craft, and she used designs and patterns and skills (witness the selvage-to-selvage wefts; three-strand twining; wrapped lattice weave; lack of eccentrics and vertical overlay twining) with which she was familiar as a basket weaver, in both the northern and southern areas.

The new art style—the highly elaborate stylized naturalistic design of the Chilkat blanket—was probably a male development. The Chilkat blanket was woven by women who copied pattern boards made by the men, and who of necessity invented and adapted new techniques to meet the requirements of design. This new style was in accord with the total artistic and social development of its time.

It is the Tsimshian who have been credited by Emmons, and by Boas following the mythology, and by most later writers, with the origin of the Chilkat blanket. Because of the apparent antecedence of the northern blankets of geometric style, and largely because of the lack of evidence of early weaving in the Tsimshian area, I would assume that the mythology refers to the elaborate "totemic" or heraldic designing of the so-called Chilkat blanket. A total lack of information on Tsimshian weaving and the very dubious provenience of the great majority of blankets that are tentatively labeled Tsimshian makes further discussion of this origin mythology fruitless.

Of the development of the historic Chilkat blanket, the following items are outstanding:

There are no blankets with stylized naturalistic designs (unless the fragment in the National Museum of Canada is an exception) which do not have the cedar bark and mountain goat wool wrapped warp. There are no blankets with the stylized naturalistic designs which are dated before the beginning of the 19th century, and the oldest with known date of collection appears to be about 1830 (Willoughby, 1910, p. 10). Emmons (1907, p. 390) says that his earliest blanket was supposedly the first woven by the Chilkat and was copied from an old Tsimshian blanket; it was said to be several generations old. The introduction of the elaborate designs brought new weaving techniques unknown to basketry and necessary to develop the patterns of a multiplicity of small bodies of color. All of the Chilkat blankets have the rounded lower edge, the so-called five-sided shape. None of the Chilkat blankets is as finely woven as are the geometric patterned; none is as flexible. The addition of cedar bark made for greater rigidity; it also, of course, supplemented a probably limited supply of mountain goat wool. It permitted an expansion of the quantity of production which agreed with the need for wealth-display items.

There are only a few blankets which fill the technologic and decorative gap between the geometric Yakutat, Swift, Copenhagen, and British Museum specimens and the historic Chilkat (and/or Tsimshian) blankets.

A cut-up blanket, incorporated into a dancing shirt, in the former Museum of the Geological Survey of Canada (now the National Museum of Canada) is illustrated in part by Kissell (1928, fig. 3: n.b. that the description of this fragment on page 117 wrongly refers to fig. 2); by Emmons (1907, fig. 58, p. 388) and by Willoughby (1910, pl. 2). None of the authors states whether the fragment is of pure mountain goat wool or mountain goat wool and cedar bark mixed. This fragment shares the zigzag and bar design with the geometric-designed blankets and has a form of concentric triangle designs. The selvage-to-selvage wefts in the geometric pattern are interrupted by a stylized naturalistic design in which short lengths of yarn are inserted to make the pattern in typical Chilkat techniques. There are a few tassels added to the naturalistic design, though the geometric-patterned section seems to have none. This fragment is totally without provenience either temporal or geographical.

The blanket illustrated in Davis (1949, p. 64) is part of the Rasmussen collection of the Portland Art Museum (cat. No. 49.3.546). The card on the blanket reads as follows:

> Chilkat Blanket. Tsimshian. 10–18–39. A very old blanket collected by Mrs. Kirk, wife of the soap Mfg. in San Francisco in 1880. . . . Date ? Unusually fine weaving. Moth eaten places. Sea otter fur ? Laced in top. A remarkable piece. Its faded colors match the Chilkat blanketry leggings I got from Nass River.

This blanket was lent for comparative study by the Portland Art Museum. It is indeed a remarkable and beautiful blanket. It has the typical five-sided shape of the Chilkat blanket with the very deep lower fringe (never characteristic of the geometric-patterned blankets). It has a wool-wrapped cedar-bark warp and fringe. The warp and weft counts indicate greater fineness of yarns than any Chilkats that I have observed. The center yoke is a geometric-patterned, two-colored section in which the wefts proceed from one side of the yoke to the opposite. The geometric pattern is obviously not as intricate as any of the previously observed; but its technique is the same. The stylized naturalistic section surrounding the yoke uses every known Chilkat technique. The colors are unique insofar as my observation and Emmon's remarks are concerned. The green is a decidedly yellow green and rather deep in the unfaded reverse side; the usual pale yellow, dark brown or black, and the natural white complete the colors. The pattern is simpler than in many blankets; the faces are upside down to the observer as in old dance kilts. The wing design is also reversed and it lacks the common three-section division of design.

Emmons (1907, p. 388, fig. 581, *a*) illustrates one other blanket which he calls Tsimshian. It has no geometric patterning, but the design is aberrant from the usual Chilkat designing. This is also true of his oldest Chilkat blanket which he was told was copied from a Tsimshian blanket (ibid., p. 390, fig. 580).

A few old dance shirts have bands of geometric designs in selvage-to-selvage twining. Washington State Museum cat. No. 1–631, Chilkat Tlingit, is a shirt that shows the geometric band in the back of the shirt only; it is simpler in its development than any of the wholly geometric-patterned blankets. The shirt has a wool-wrapped cedar bark warp, as, I believe, do all of the dance shirts.

It is on the basis of the known provenience of the Yakutat blanket that it has been possible to place more accurately the all mountain goat wool, geometric-patterned blankets. Their more northerly location seems to indicate an earlier center of blanket weaving than that attributed to the Tsimshian. The stylized-naturalistic design blankets seem to combine traits from three earlier weaving centers: (1) the mountain goat wool blankets from southern Alaska; (2) the highly developed art style of the Tsimshian (with its probable heraldic significance); and (3) the cedar-bark cape weaving of the Nootka and southern groups (which probably added the more rounded shape, the plaited bands at the side selvages, and the very long lower fringes, as well as the new fiber).

The intermediate blankets show a gradual blending of design; they are few in number, and though one at least is designated as Tsimshian they are really of unknown provenience.

CONCLUSION

By Frederica de Laguna

AGE OF THE SITES

Since Yakutat archeological materials have many striking similarities to those from Prince William Sound, the criteria used to suggest a relative chronology for Chugach sites (de Laguna, 1956, pp. 64 f.) may be partially applicable. Chugach cultural periods were:

(1) *Older prehistoric* (perhaps contemporaneous with Kachemak Bay sub-III and III, and with most of the lower levels at Uyak Bay, Kodiak Island): Decomposed shells in middens, incised stone plaques, relative abundance of planing adzes over splitting adzes and small woodworking tools, relative abundance of tanged slate blades and slender slate points like awls over barbed slate blades, chipped ulo-shaped scrapers, and absence of native copper.

For the beginning of occupation at Palugvik, Prince William Sound, which must have been within or possibly at the beginning of this cultural stage, Rainey and Ralph (1959, p. 368) have published two radiocarbon dates. These are based on one house post (P–174 and P–192, cat. No. 33–37–476) found at the bottom of the midden. This post had 105 rings and had been coated on the outside with paraffin. The date obtained from the outer part of the post was 1753 ± 105 B.P., or A.D. 100 to 310. The second date from the core of the post, from which 83 years was subtracted, was 1727 ± 105 B.P., or A.D. 126 to 336. A wooden shovel blade, similarly treated with paraffin (P–173, 33–37–481), gave a date of 2265 ± 112 B.P., or 419 to 295 B.C., which was discarded because of suspicion of paraffin contamination. While the dates from the same house post corroborate each other, they should only be taken as suggestive of the age of the older prehistoric period in Prince William Sound, since they are not part of a series. The assumption of relative contemporaneity with similar cultures on Kachemak Bay and Kodiak is only a guess.

We should note that the single date obtained from five pieces of caribou antler from the Period III level of the Yukon Island site in Kachemak Bay (P–138) is 1369 ± 102 B.P., or A.D. 487 to 691, but it stands alone. It can at best only suggest that this date fell somewhere within the timespan of Kachemak Bay, but can determine neither its beginning nor its end. Nor is it possible to exclude the suspicion of contamination from sea water or from preservatives. The same hesitations should apply to the interpretation of the single date for Kachemak Bay I, obtained by combining eight pieces of antler from Yukon Island I (P–139). This gave a reading of 2706 ± B.P., or 866 to 630 B.C. (Rainey and Ralph, 1959, p. 371). Again this stands alone (de Laguna, 1962).

(2) *Later prehistoric* (possibly contemporaneous with late Kachemak Bay III and IV, and with the upper levels at Uyak Bay): Less decomposed shells, abundance of fire-cracked rocks (probably used for the steam bath), predominance of the splitting adz and of small chisels and other small woodworking tools over the larger planing adz, development of variants of the splitting adz such as the grooved ax, the ax-pick, and the adz-ax, presence of war club heads (double-pointed stone pick and chipped stone pick), increased popularity of barbed stone blades, appearance of native copper in the latest deposits. There are no radiocarbon dates for this period.

(3) *Protohistoric:* The same types as in the later prehistoric except for the addition of blue glass beads of the type seen by Captain Cook in 1778. Presumably iron was also present, although we found none in Chugach sites.

(4) *Historic* (since 1783–84, with the beginning of Russian expansion into Prince William Sound and along the Gulf of Alaska): Trade goods, especially small glass beads (like those found in the grave on Knight Island), skeletal remains with lesions of syphilis and tuberculosis, and, still later, the appearance of Christian burial.

Admittedly, the only distinction between late prehistoric and protohistoric sites rests on the presence or absence of Cook type glass beads Since these were undoubtedly rare and precious, their absence from a site that yielded few personal ornaments cannot be taken as proof of prehistoric age.

It is, however, probably significant that no beads or any objects proving direct contact with White men were found at Old Town, while Cook type beads and an iron arrowhead came from Shallow Water Town on Little Lost River. This suggests that such beads would have been encountered in Old Town middens, caches, and house pits, if the latter site had been inhabited at the same time as the small settlement on Little Lost River. Old Town was probably abandoned before these beads became available to the Yakutat people.

Cook type beads were among the trade goods carried by the Russians, although they were disseminated to the Chugach before the Russians themselves came to Prince William Sound. They were probably of Chinese manufacture, and it is tempting to surmise that the first to reach Alaska may have been the 20 strings of Chinese beads, left by Bering's expedition in 1741 in a Chugach house on Kayak Island in Controller Bay (de Laguna, 1947, pp. 242 f.; 1956, pp. 60 ff.). In any case, we may hazard that Cook type beads, without other trade goods, might appear at sites dating from the middle to the late 18th century, and that Old Town may have been abandoned somewhat earlier.

It will be remembered that scraps of iron were found only in Mounds A and B (Old Town III and II), and not in what is considered the oldest section of the site, Mounds C and D and House Pit 7. Theoretically, there are three possible sources of such iron (de Laguna, 1956, pp. 61 ff.). First, it might have been obtained from Asiatic sources by purely aboriginal trade via Bering Strait, where the Eskimo apparently had iron points for engraving tools from one to two thousand years ago. Although this source may have supplied the tiny scraps of metal used for incising the compass-drawn dot-and-circle designs on artifacts from Kachemak Bay III, early Kodiak, and early Aleutian sites, the iron found at Old Town must be more recent, for it is in larger pieces, and there is no evidence that any but the most minute fragments were known in Alaska until after the middle of the 17th century, when the Russians had established themselves on the Anadyr River in Siberia. Thus, the earliest iron knives in northern Alaska do not antedate the end of that century.

A second possibility is that iron was obtained by the Aleut and Pacific Eskimo by more direct trade with Asia, perhaps as their traditions suggest, from Russian or Chinese voyagers who may have preceded Bering in the early 18th century.

The third, and most likely, source of iron is nails and bolts in driftwood and wreckage, which increased maritime activity during the 17th and 18th centuries would have made available (cf. Rickard, 1939). While we do not know how early the Yakutat people may have obtained drift iron, it is likely to have been before they acquired glass beads, since the latter could only have been obtained through trade. We may, therefore, be able to distinguish an early protohistoric period with drift iron but without beads, and a later protohistoric period with both drift iron and Cook type beads. This is, in fact, what is suggested by the Yakutat sites, if Old Town II and III represent the earlier phase and Shallow Water Town the later.

Another clue to the relative age of Old Town is provided by the occurrence of native copper. This is, as far as we know, the richest Alaskan site for native copper with the possible exception of Dixthada, near Tanacross, on the upper Tanana River, close to the source of the metal (cf. Rainey, 1939, pp. 364–371). Copper first appears at Old Town in the form of three pieces in the upper layers of Old Town I, and steadily increases in quantity through the deposits of later periods.

There is, of course, some uncertainty as to the age of copper working in Alaska. Because it is undoubtedly old in many parts of the New World—the Old Copper Culture of the Great Lakes area yields radiocarbon dates of 5,600 or 7,150 years ago ±600 years (Wormington, 1957, p. 150)—it is natural that Birket-Smith (1953, pp. 225 f.) should suggest that it was accidental that copper was found only in sites of the very late prehistoric period in Prince William Sound and Kachemak Bay. We should also note that ornaments of native copper occur in both Beach Grove and Marpole (Eburne), with radiocarbon dates from the latter site ranging from 943 B.C. ±170 to A.D. 179 ±60 years (Borden, personal communication). Despite this range in dates, and Dr. Borden's hestitation to accept the earliest count from the site, there seems to be no question but that copper working was old on the southern Northwest Coast. However, the Yakutat and Atna stories about the origin of copper working lack the mythological character which would suggest great antiquity for this art; rather, the protagonists appear to have been ordinary Indians, though supernaturally blessed with luck. There is, of course, no necessary connection between the copper work in these two areas.

We may assume, therefore, that Old Town was settled in the late prehistoric period and abandoned before the late phase of the protohistoric period. However, it is possible that the postulated "earlier protohistoric period" of drift iron may overlap in time the "later prehistoric period" of native copper alone. The Yakutat natives had easier access to the great ocean beaches where wreckage was found than did most of the Chugach, and may always have had more iron than the latter, and have found it earlier. Absence of iron from Chugach sites where it might have been expected, may, therefore, be due to geographical factors.

We do not know how early in post-Wisconsin times the Yakutat area may have been open for human settlement. Riddell has reviewed the geological and botanical data which may indicate at what period or periods southeastern and southwestern Alaska could have been inhabited. In summarizing these findings (1954, p. 105), he concludes that: "Even the currently most heavily glaciated region of the coast, of which Yakutat Bay is the approximate center, probably was sufficiently deglaciated and populated with the necessary types of flora and fauna to allow human occupation about 6,000 years ago." The Aleutian Islands and the southern Northwest Coast were habitable several thousand years earlier. About three to five thousand years ago occurred the post-glacial optimum in southeastern Alaska, followed by a glacial advance (Riddell, 1954, pp. 75 ff., 177).

> It must be remembered . . . that the present icefields in the Pacific Coast region are not remnants of the Wisconsin advances, but are the residue of a relatively small ice advance of approximately 3,000 years ago. This period of ice advance is sometimes referred to as "the little ice age." Before this advance, the glaciers in Alaska had retreated a greater distance than have the present glaciers. [Ibid., p. 108.]

In general, during the past two millennia, the glaciers in the Pacific Northwest have been retreating, except for local fluctuations, for example, an advance culminating between A.D. 600 and 920 in Icy Bay and between A.D. 970 and 1290 in Yakutat Bay (Plafker and Miller, 1958). The earlier "little ice age" and this (and other local) readvance may not have prevented human occupation of all of the northern Northwest Coast and Alaska Gulf Coast regions, yet they may have been severe enough to have discouraged or even prevented travel and hence cultural exchanges along this part of the coastline. Furthermore, we cannot be confident that we yet know what parts of that coastline or what present foreshores were above sea level in critical periods in the past, although raised beaches in the Gulf of Alaska and in southeastern Alaska attest to uplift in both geologically and historically recent times.

In any event, there are no archeological remains known at present which suggest habitation in the Yakutat area before the glacial advance between A.D. 970 and 1290 in Yakutat Bay. These dates are based on radiocarbon analyses of wood from an end moraine near Ocean Cape. Occupation may well have begun, however, some time during the 15th or 16th century, when the ice had retreated.

> According to recent studies made by the U.S. Forest Service, the forest growing on the outwash apron at the outer margin of the end moraine near Yakutat is a relatively even-aged spruce stand with an average age of nearly 550 years . . . The oldest of 27 spruce trees on which an accurate age count was obtained in 1953 was then 553 years old . . . This indicates that recession of the Yakutat Bay lobe began before 1400 A.D., assuming that the outwash apron did not become stabilized and suitable for forest growth until after the recession had begun . . . the spruce forest probably did not become established on the outwash apron near Yakutat for at least 50 years after the tidal ice front began to retreat into Yakutat Bay. [Plafker and Miller, 1958.]

Knight Island itself would not have been uncovered until somewhat later, and a permanent village would hardly have been established directly under the end of a huge glacier. During 1953, logging operations were carried out near Redfield Cove, on the east shore of Yakutat Bay, opposite Dolgoi and Kriwoi Islands. Borings from some of the trees cut at that time were examined by Dr. Giddings, who informs us (letter of April 4, 1958) that these trees began to grow in A.D. 1530, 1630, and 1660. This information gives us some clue as to when Knight Island might have been occupied. Spruce trees growing in House Pit 7, and thus indicating the abandonment of the oldest part of the site, had circumferences ranging from 5 feet 6 inches to 8 feet; a hemlock had a circumference of 3 feet 10 inches.

Borings of spruce trees growing in House Pit 7 and in other parts of the site were examined by Dr. Giddings. Unfortunately the blade of the core extractor was only 12 inches long and thus much too short to reach the center of the larger trees. It was impossible to cut them down and secure core samples from logs, as was done with the specimens from Redfield Cove. In consequence, we do not know when the oldest trees on the site began to grow. A small tree in House Pit 7 could be dated back to A.D. 1839, with perhaps no more than 3 or 4 central rings missing. The much larger spruce growing within the same house pit, however, could be dated back only to 1849, and Dr. Giddings (letter of Dec. 11, 1962) informs me: "The center is missing, and no estimate of the rings to the center is possible." Thus, the larger, and presumably the older, the trees tested, the smaller was the proportion of growth rings that could be reached with the borer. In only the little hemlock tree in House Pit 7 was the center ring present, and this gave a date of A.D. 1876, which unfortunately tells us nothing about the age of the site.

Charcoal samples were sent to Miss Elizabeth Ralph, Department of Physics, University of Pennsylvania, who was able to make radiocarbon tests from two pieces of wood from the Storage House in Old Town II. Unfortunately a sample from House 8 and another from the bottom of House Pit 7 were too small for analysis. A charred stake from the Storage House (P–178) gave a date as of June 1958 of 136 ± 62 years B.P., or from A.D. 1760 to 1884. A large charcoal plank with 125 rings gave a date of 328 ± 78 B.P., or A.D. 1552 to 1698. Since it was not possible to tell whether or not the sample came from the core or the outer part of the tree, the true age may be 125 years younger, or from A.D. 1677 to 1833 (Elizabeth Ralph, letter of July 16, 1958). Judging by the contents of the site and by the growth of trees upon it, the older limit for the first date (A.D. 1760) is possible, but the 19th-century dates are highly improbable. Although Malaspina in 1791 saw grave monuments here, he failed to note any signs of habitation. An early to mid-18th-century date would seem most reasonable. It is a pity that these radiocarbon analyses, made by the pure carbon dioxide proportional counting technique, were not more in accord with each other, since they offer no surer dating than an ordinary archeological estimate.

According to native testimony, Diyaguna'ᴇt was abandoned some time before 1880. China fragments suggest a terminal date between 1850 and 1875, and stone tools indicate that occupation began in prehistoric times. The part of Nesšudat that we explored is said to have been settled after the defeat of the Russians in 1805 and to have been occupied until late in the 19th century, if not into the 20th. All of the material which we found there belongs to the historic period. Shallow Water Town on Little Lost River was probably protohistoric. Too little was found at other sites to indicate their age.

CULTURAL POSITION OF THE YAKUTAT REMAINS

Because the present population of Yakutat is predominantly Tlingit in culture and language, we must not assume that Yakutat archeology is also Tlingit archeology. Rather, if we are guided by native traditions concerning prehistoric population movements from the mouth of the Copper River and by the fact that Eyak was probably spoken at Yakutat 150 or 200 years ago, we should consider Yakutat archeology to be Eyak archeology. There are certainly a number of specific traits, such as the split-prow hunting canoe and the small house with single ridgepole, that link Yakutat closely to the Eyak of the Copper River Delta. Were our information on Copper River Eyak culture more complete, or had we archeological materials from the Copper River Delta with which to compare the Yakutat specimens, it would be possible, no doubt, to prove that early Yakutat culture was indeed Eyak.

However, even if we had established the last point, we should still be faced with the problem of what is the archeological Eyak-Yakutat culture. Are we, perhaps, in a deeper sense actually dealing with northern Tlingit archeology? It will be remembered that Birket-Smith (Birket-Smith and de Laguna, 1938, pp. 530 f.) concluded that Eyak culture represented a very old-fashioned form of northern Northwest Coast culture, the basic elements of which appear to be ancient since they are widely shared by the Eskimo and the Indians of northwestern America. He also suggested that the Eyak might once have occupied the territory of the northern Tlingit. Certainly the many similarities between Yakutat and Tlingit archeological materials indicate that we have here something more than the products of recent diffusion, even though none of the actual specimens yet found can claim great antiquity.

The Yakutat, northern Tlingit, and Eyak are also closely linked to the interior Athabaskans, not only through population movements and intermarriages but through trade and the cultural exchanges of almost every trait compatible with the environmental differences. If archeological sites in the Dry Bay area had been excavated, or if our knowledge of Copper River Atna and Alsek River Tutchone were full enough to permit detailed comparisons, we would probably have been struck by similarities between these interior cultures and those of the coast. We might even ask whether they represented merely interior and coastal aspects of the same basic culture.

It is obvious that we have been hampered in our distribution studies by the fact that so little is known about the archeology of the northern and central Northwest Coast. We have, therefore, been forced to rely upon ethnological data or upon the archeological types from these areas described by Drucker (1943). The latter are not altogether satisfactory for our purposes, because Drucker's typology often does not correspond closely enough to our specimens to permit detailed comparisons, and because the artifacts upon which it is based have, for the most part, found their way into museums without adequate data that could tell us their relative ages. It is probably safe to assume that most of the known specimens from the northern and central Northwest Coast are not very old and, like the Tlingit material excavated near Angoon in 1950, represent the aboriginal cultures in the late prehistoric and protohistoric periods.

It is especially unfortunate that no Nootkan material is included in Drucker's summary of Northwest Coast archeology, since both Borden (1951, 1962) and Drucker (1955) have emphasized the peculiar position of the Nootka on the Northwest Coast, and have cited similarities between Nootka and Eskimo cultures. The Nootka have been described as the most Eskimo-like and also as the Indian group longest established on the Northwest Coast. For this reason, an understanding of their archeology is crucial.

On the southern Northwest Coast, on the other hand, we have abundant material from sites within the Coast Salish area, some of established antiquity, others more recent. Here we are faced with the products of a long, complex history, involving cultural exchanges between the coast and the interior and between the north and the south. In addition, there are local innovations which seem to be peculiar to specific communities. For example, there seem to be important differences between the largely contemporary Marpole and Locarno Beach Phases of the first millennium B. C. (Borden, 1962). Since some of the most impotant material has not yet been published in full, we have again been forced to compare the Yakutat artifacts with southern Northwest Coast types, rather than with actual specimens. It also seems evident from what has been published that the history of the cultural growths and spreads in this area has not yet been worked out, nor the chronology of the various sites yet firmly established. Part of the trouble has lain in defining the problem too simply in terms of interior and Eskimo types or influences, neglecting the full implications of cultural change which also was going on in the interior, as well as the fact that striking changes have occurred in Eskimo cultures during the 2,300 to 3,000 years represented by the southern Northwest Coast sites, so that influences coming from the interior or from the north would have been different at different periods. Another difficulty lies in the fact that many "interior" traits are quite at home in Eskimo culture, so that the dichotomy implied by the labels "interior" and "Eskimoid" is misleading. It should also be remembered that the Pacific Eskimo are just as truly

Eskimo as their Arctic relatives, even though they do not correspond to the "Eskimo" stereotype, and it is in the Pacific Eskimo cultures of southwestern Alaska that many of the "interior" traits have a great antiquity and fundamental importance.

Recently, however, instead of interpreting similarities between the ancient southern Northwest Coast and Eskimo cultures as due to influences from the latter, Borden (1962) suggests that diffusion from south to north carried to the Eskimo such important traits as labrets, the grinding of slate, stone saws, etc. Some of these, as well as other traits, are assumed to have come from the Siberian Neolithic and to have traveled to southern British Columbia via inland Alaskan and Canadian routes, without Eskimo intermediaries, perhaps before the Eskimo had moved from a homeland in southwestern Alaska to stand at the bridge of Bering Strait. This hypothesis has been suggested primarily because the available radiocarbon dates would place Eskimo cultures with these traits as later than the Fraser River Delta sites that share them. Unfortunately, many of these dates, like the two from Kachemak Bay, for example, stand alone without corroboration, or betray serious inconsistencies, as with the Okvik-Old Bering Sea readings (Rainy and Ralph, 1959, pp. 373 f.; Giddings, 1960, pp. 123 f.). Until adequate series of mutually supporting radiocarbon dates are available for the cultures in question, it would seem wiser to note similarities in trait inventories as indications of cultural relationships, without deciding too definitely the direction or route of diffusion.

If we have leaned heavily on Pacific Eskimo archeology in making our comparisons, it is both because this archeology is known in considerable detail and because there are undoubtedly close similarities between Yakutat and Pacific Eskimo culture, particularly that of the Chugach. There is hardly a single trait of Yakutat archeology that cannot be duplicated or at least matched by something similar from Prince William Sound, and the trends noted with respect to the use of copper, of woodworking tools, and so forth, are the same in both areas. Many of these points of similarity apply to traits that are narrowly diffused and that appear only in late prehistoric times, but others apply to traits that are very much older.

We seem, therefore, to be dealing with a North Pacific province where the cultural lines between Aleut-Pacific Eskimo and Eyak-Yakutat are much less sharply drawn than are the linguistic boundaries. Where the southern limits of this province are to be found will depend upon future archeological work on the Northwest Coast, but we should not be surprised if the northern Tlingit, or perhaps all of the northern Northwest Coast, might not have to be included within a major North Pacific region. In defining such a cultural province, we should not forget the strong ties between the Eskimo of Kachemak Bay and Prince William Sound with the adjacent Athabaskans, as well as those already cited that link the Eyak, Yakutat, and Tlingit with their interior neighbors.

When we come to the central Northwest Coast, to the Queen Charlotte-Milbank Sound Aspect, to use Drucker's designation, there seems to be more of a cultural boundary. If we could go back to the last millennium before Christ, to the period when Locarno Beach I, Marpole (Eburne), Whalen I, and perhaps other southern sites were occupied, and when ancient Pacific Eskimo (cf. Kachemak Bay I) and "Pre-Aleut" cultures were flourishing, we should perhaps find no sharp break between the various cultures stretching from southern British Columbia to southwestern Alaska. The many types common to both of these areas attest linkages between them which appear to have been lost in the recent intervening cultures known to us through ethnography and through archeological collections of meager antiquity. Is this because, as Borden suggests (1951, pp. 37 ff.), an old cultural connection between the Wakashan (Nootka-Kwakiutl) and the Eskimo has been disrupted by the intrusion onto the Northwest Coast of the Tlingit, Haida, and Tsimshian? While such movements from interior to the coast undoubtedly have occurred and may to some degree have disrupted cultural continuities, yet perhaps what these interior immigrants introduced may not have been as completely foreign to the coast as one might suppose, if both ancient coastal and interior tribes shared in a common northwestern tradition. Perhaps, too, there were always some peculiarities of the northern Northwest Coast (such as matrilineal social organization?), which we might call "Eyak" or even "western Na-Déné," that distinguished it from the central and southern regions, despite the many ancient cultural ties that linked north and south.

Among the latter, I am loath to recognize a special "Eskimoid" stamp in Nootka culture. Aside from the proficiency of the Nootka as seamen and aside from certain techniques and rituals associated with Nootka whaling, there is little else in Nootka culture that strikes us as particularly Eskimoid. Actually, in other respects, the Tlingit seem more like the Eskimo, as has been apparent from our comparisons. Is it possible that Nootka whaling is really the result of the perfection by a people living on the ocean of common and widely diffused methods and rituals of hunting sea mammals? Can it be a growth parallel to but not directly related to northern Eskimo whaling? The latter was not practiced in southwestern Alaska, and was not developed in Bering Sea until the Punuk culture, dating from the early Christian era (despite the appearance of one harpoon head large enough to capture a whale in the Okvik-Old Bering Sea culture).

Farther north, the people who left the "Kruenstern notched point assemblage (earlier than 1500 B.C.)" were "primarily seal hunters and whalers" (Giddings, 1960, p. 127), but we are not yet told how they took whales. In any event, the succeeding Choris caribou hunters (1500–500 B.C.) did no whaling, and in fact, whaling with toggle harpoons did not appear until the development of Western Thule culture, approximately coeval with the Punuk. Thus, there are chronological and geographical difficulties in postulating a direct relationship between Nootka and Eskimo whaling, especially in view of the marked dissimilarities between other aspects of Northern Alaskan Eskimo and Nootka cultures. This is, however, a problem which cannot be solved without systematic excavation at Nootka and at more northern Northwest Coast sites.

In appraising cultural similarities and dissimilarities, or in speculating upon the direction of diffusion, we are bound to be somewhat subjective in our judgment because we cannot help using those cultures with which we are most familiar as standards against which others are to be measured. Thus, the northern Alaskan Eskimo are assumed, perhaps unconsciously, to constitute a norm of the typical Alaskan Eskimo from which the less familiar Pacific Eskimo appear divergent, or as intermediate between the "true Eskimo" and the Aleut. The striking and vigorous cultures of the Northwest Coast are better known to us than those of the Yakutat, Eyak, and Chugach, or at least we feel that they are better known, and so we unconsciously assume that they are more developed. Thus, when we find similarities among these groups, we are inclined to explain them as the result of Tlingit influences, for it was among the Tlingit or other Northwest Coast tribes that we first encountered these traits. Had we, for example, come first to the Koniag and Chugach in the days of their cultural vigor and had derived our knowledge of the Tlingit only when their aboriginal culture was already faded, what would have been our natural impressions of these peoples?

We really know little about Yakutat, Eyak, and Pacific Eskimo art, and almost nothing of their aboriginal social and ceremonial life, whereas it is these aspects of Northwest Coast culture that have most strongly struck our imagination. Instead of assuming that the animal art style, for example, originated in the south and diffused northwestward across the Gulf of Alaska, should we not keep an open mind and ask whether those examples of "Northwest Coast art style" represented by carved and painted wooden objects or painted basketry hats from the Yakutat, Eyak, Chugach, and Koniag, may not equally well represent the survival of an artistic tradition common to the cultures of southwestern Alaska, the Gulf of Alaska, and the Northwest Coast, and admit that we do not as yet know the place of origin or the stages of development of this art? For, despite the early development of stone and bone carving on the southern Northwest Coast and whatever general stimulation or specific design elements this may have imparted to the north, it seems impossible to derive in toto the typical (northern) Northwest Coast art style, with its dissected and reassembled totemic animal forms, from the ancient art of southern British Columbia.

It is obviously impossible with the data at hand to establish a convincing hypothesis about the development of Northwest Coast culture. Yet it is also clear that without this knowledge we cannot understand Yakutat culture, especially in the periods represented by the Old Town remains. This archeological material is not old enough to give us a view into the remote past, nor is it rich enough to serve as a complete inventory of material culture in late prehistoric and protohistoric times, despite the happy circumstances that preserved so many wooden objects through carbonization.

One has the impression that a good deal of Northwest Coast culture is of relatively recent growth and elaboration, and it is just those aspects—the spectacular uses to which wood has been put, and the rich social and ceremonial life—which are most characteristic or typical of the Northwest Coast, and which perhaps in their familiar forms are the most recent. Strip away the wealth that makes possible the validation of titles and ceremonial prerogatives, reduce the elaborate lineage and sib crests to representations of guardian spirits, restrict the products of woodworking to small single-pole gable houses and to small dugouts—is this not what Northwest Coast culture may have been before the development of its spectacular patterns? What then is the basis of that culture? Might it not have been a style of life to which the loosely organized village communities of the Coast Salish or the simpler culture of the Eyak and of the older Yakutat people would not have appeared marginal?

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EXPLANATION OF PLATES

Plate 1

Sites in the Yakutat Bay area. (Frontispiece.)

a, The channel between Knight Island and the mainland; Mount Saint Elias in background; Little Fort Island in middle distance (right).

b, Diyaguna'ᴇt, Lost River, at high tide.

Photographs by Frederica de Laguna.

Plate 2

Knight Island, Yakutat Bay.

a, House Pit 1, Old Town, before excavation. Riddell, Lane, McGeein, and Freed are standing in the four corners; Catharine McClellan is in the entrance passage.

b, South shore of Knight Island just west of old Old Town, showing trees killed by subsidence of land in 1899. The site is just hidden by the living trees.

Photographs by Frederica de Laguna.

Plate 3

Lamp and petroglyph.

a, Stone lamp, Diyaguna'ᴇt.

b, Petroglyph, representing the Bear (?), found in the Ankau lagoons.

Photographs by Frederica de Laguna.

PLATE 4

Objects of iron.

a, Drift iron nail, wrapped with organic material, from just below surface of fill in House Pit 1, Old Town III (No. 616).

b, Fragmentary drift iron knife, from just above floor of Storage House, Old Town II (No. 201).

c, Drift iron nail, from fill of House 9, Old Town III (No. 652).

d, Drift iron nail, from Mound B, lower levels, Old Town II (No. 552).

e, Fragmentary drift iron knife blade, from just above floor of Storage House, Old Town II (No. 198).

f, Drift iron nail, from fill of House Pit 1, Old Town III (No. 1002).

g, Awl made of drift iron, from Mound B, lower levels, Old Town II (No. 141).

h, Drift iron knife blade from below floor level of House 9, Old Town III (No. 896).

i, Commercial iron blade for knife or spear, from Nessudat (No. N/4).

j, Fragmentary drift iron knife blade, from below floor of House 8, Old Town II (No. 780).

k, Drift iron blade for planing adz or scraper, from Subsurface Pit 32, Mound B, lower levels, Old Town II (No. 280).

l, Drift iron blade for planing adz or chisel, from Mound A, level unknown, Old Town III (49-25-27).

Photograph by Reuben Goldberg.

PLATE 5

Splitting adzes, axes, and war club.

a, Blade for splitting adz, fine-grained metamorphic rock, with narrow butt, three grooves and three knobs, from fill of House 8, Old Town II (No. 617).

b, Blade for splitting adz, greenstone, with two grooves and three knobs, cached with *d* under a grinding slab (No. 741) in fill of House Pit 1, Old Town III (No. 713).

c, Broken head for war club, hard crystalline rock, from floor of House 8, Old Town II (No. 980).

d, Blade for splitting adz, greenstone, with three or four grooves, found with *b* in fill of House Pit 1, Old Town III (No. 714).

e, Ax blade, greenstone (seen from above), reshaped from broken splitting adz (?), from Mound B, upper levels, Old Town III (No. 578).

f, Broken blade for splitting adz, greenstone, with narrow butt, four grooves and two knobs, from Mound B, upper levels, Old Town III (49-25-53).

g, Broken greenstone blade for splitting adz, used as a hammer, from Mound B, upper levels, Old Town III (No. 885).

h, Broken blade for splitting adz, greenstone, with knob and one or two grooves, partially reshaped (for planing adz?), from Mound B, upper levels, Old Town III (No. 884).

i, Ax blade, fine-grained metamorphic rock (seen from the side), reshaped for planing adz (?), from just above floor of Storage House, Old Town II (No. 229).

Photograph by Reuben Goldberg.

PLATE 6

Planing adzes.

a, Planing adz blade, greenstone, from floor of House 8, Old Town II (No. 978).
b, Small planing adz blade, gray schist, from Mound C, lower levels, Old Town I (No. 340).
c, Planing adz blade, greenstone, from Mound B, lower levels, Old Town II (No. 603).
d, Planing adz blade, slate, from Diyaguna'ᴇt (49-25-109).
e, Small planing adz blade, micaceous schist, from Mound C, upper levels, Old Town I (No. 645).
f, Planing adz blade, greenstone, from Mound B, lower levels, Old Town II (No. 230).
g, Slender planing adz blade or chisel, slate, from fill of House Pit 1, Old Town III (No. 675).
h, Unfinished planing adz blade, from lower fill of House Pit 7, Old Town I (No. 818).
i, Planing adz (or ax?) blade, greenstone, from fill of House Pit 1, Old Town III (No. 979).
j, Unfinished planing adz blade, greenstone, reshaped from broken splitting adz (?), from Mound B, lower levels, Old Town II (No. 312).

Photograph by Reuben Goldberg.

PLATE 7

Small woodworking tools like miniature adz blades.

a, Slate blade for tiny planing adz or chisel, from Mound A, upper levels, Old Town III (No. 353).
b, Schist blade for tiny planing adz or chisel, from Mound C, upper levels, Old Town I (No. 642).
c, Slate blade for tiny planing adz or chisel, from Mound D, upper levels, Old Town I (No. 880).
d, Unfinished slate blade for small planing adz or chisel, from Mound B, upper levels, Old Town III (No. 148).
e, Broken slate blade for small planing adz or chisel, from Mound B, upper levels, Old Town III (No. 260).
f, Schist blade like tiny splitting adz with one groove, from Mound B, upper levels, Old Town III (No. 567).
g, Greenstone blade like tiny splitting adz with one groove, from fill of House Pit 1, Old Town III (No. 676).
h, Schist slate blade like tiny splitting adz, with marks of lashing, from Mound B, lower levels, Old Town II (No. 966).
i, Ungrooved schist blade for miniature adz or ax, from fill above House 9, Old Town III (No. 941).
j, Greenstone blade like tiny splitting adz with two grooves, from Subsurface Pit 14, Mound B, lower levels, Old Town II (No. 49).
k, Schist blade like tiny splitting adz with one groove, from Mound B, upper levels, Old Town III (No. 579).
l, Green schist blade like tiny ungrooved splitting adz, from fill of House Pit 1, Old Town III (No. 715).
m, Green schist blade like tiny splitting adz with one groove, from Subsurface Pit 36, Mound B, lower levels, Old Town II (No. 373).

n, Slate blade like tiny ungrooved splitting adz, from Mound B, upper levels, Old Town III (No. 841).

o, Chert blade like tiny ungrooved splitting adz, from Mound B, upper levels, Old Town III (49-29-35).

Photograph by Reuben Goldberg.

Plate 8

Small woodworking tools like chisels and burins.

a, Knifelike slate chisel blade, from Mound B, upper levels, Old Town III (No. 949).

b, Knifelike slate chisel blade, from just above floor of House 8, Old Town II (No. 995).

c, Slate blade for chisel or drill, from Mound B, upper levels, Old Town III (No. 336).

d, Slate blade for chisel or drill, from Mound B, lower levels, Old Town II (No. 610).

e, Tiny burinlike slate blade, from Mound B, upper levels, Old Town III (No. 145).

f, Tiny burinlike slate blade, from fill above Storage House, Old Town II (No. 376).

g, Tiny burinlike slate blade, from Mound B, lower levels, Old Town II (No. 155).

h, Thin burinlike slate chisel blade, notched, from Mound B, upper levels, Old Town III (No. 142).

i, Thin burinlike slate chisel blade (unhafted?), from Mound B, upper levels, Old Town III (No. 596).

j, Thin burinlike slate chisel blade (unhafted?), from fill of House Pit 1, Old Town III (No. 760).

k, Thin burinlike slate chisel blade (hafted?), from Mound B, upper levels, Old Town III (No. 143).

l, Thin burinlike slate blade (hafted?), from Surface Pit 6, Mound B, upper levels, Old Town III (No. 88).

m, Thin burinlike slate chisel blade (unhafted?), from just above floor of House 9, Old Town III (No. 879).

n, Thin burinlike slate chisel blade, notched for hafting, from Mound B, upper levels, Old Town III (No. 542).

o, Thin burinlike slate chisel blade (unhafted?), from Mound B, lower levels, Old Town II (No. 89).

p, Thin burinlike schist chisel blade, from Mound B, upper levels, Old Town III (No. 527).

Photograph by Reuben Goldberg.

Plate 9

Stone scrapers and choppers.

a, Ulo-shaped scraper, slate, from Mound C, lower levels, Old Town I (No. 342).

b, Ulo-shaped scraper, shale, from Mound B, lower levels, Old Town II (No. 132).

c, Ulo-shaped scraper, greenstone, from Mound B, upper levels, Old Town III (No. 562).

d, Boulder chip scraper or chopper, from Mound D, lower levels, Old Town I (No. 908).

e, Boulder chip scraper or chopper, from Mound D, upper levels, Old Town I (No. 864).

f, Boulder chip scraper or chopper, from Mound B, lower levels, Old Town II (No. 27).

g, Boulder chip scraper or chopper, from Mound B, upper levels, Old Town III (No. 304).

Photograph by Reuben Goldberg.

PLATE 10

Rubbing tools, whetstones, and hammers.

a, Rubbing tool, limestone, from Mound B, upper levels, Old Town III (No. 129).

b, Rubbing tool, slate, from Surface Pit 6, Mound B, upper levels, Old Town III (No. 93).

c, Bar whetstone, siltstone, floor of Storage House, Old Town II (No. 404/433).

d, Broken disk-shaped whetstone, sandstone, from Diyaguna'ᴇt (No. Dy/1).

e, Bar whetstone, fine sandstone, from Subsurface Pit 36, Mound B, lower levels, Old Town II (No. 405).

f, Hammerstone-abrader, greenstone, from Subsurface Pit 37, Mound B, lower levels, Old Town II (No. 370).

g, Pitted hammerstone (beach cobble), from Mound B, upper levels, Old Town III (No. 540).

h, Broken whetstone, sandstone, from Mound B, upper levels, Old Town II (No. 514).

i, Hammerstone(-abrader), greenstone, from Mound B, lower levels, Old Town II (No. 368).

j, Maul, limestone, from Mound B, upper levels, Old Town III (No. 294).

k, Pestle, metamorphic rock, from Nesšudat (No. N/9).

Photograph by Reuben Goldberg.

PLATE 11

Stone lamps.

a, Lamp, vesicular basalt, from just above floor of House 8, Old Town II (No. 656). (See fig. 19, *a*.)

b, Lamp, limestone, cached with plate 12, *c*, in fill of House Pit 1, Old Town III (No. 534).

c, Lamp, limestone, from Mound B, lower levels, Old Town II (No. 296).

d, Lamp, limestone, from upper levels, Mound B, Old Town III (No. 592).

e, Broken lamp, gray schist, from fill of House Pit 1, Old Town III (No. 742). (See fig. 12, *b*.)

From photographs by Kenneth S. Lane and Reuben Goldberg.

PLATE 12

Stone lamps.

a, Toy lamp, limestone pebble, from Mound B, lower levels, Old Town II (No. 60).

b, Toy lamp, limestone pebble, from fill of House Pit 1, Old Town III (No. 736).

c, Small lamp, limestone, cached with plate 11, *b*, in fill of House Pit 1, Old Town III (No. 535).

d, Toy lamp, limestone pebble, from Mound B, upper levels, Old Town III (No. 545).

e, Triangular lamp, limestone, from pit below floor of House Pit 1, Old Town III (No. 737).

f, Subrectangular lamp, from fill above House 9, Old Town III (No. 852).

Photograph by Reuben Goldberg.

PLATE 13

Barbed bone harpoon heads.

a, Head for sea otter arrow, from Mound B, upper levels, Old Town III (No. 112).
b, Head for sea otter arrow, from Mound B, lower levels, Old Town II (49-25-54).
c, Unfinished (?) head for sea otter arrow, from fill of Storage House, Old Town II (No. 206).
d, Broken head for sea otter arrow (or fishhook barb?), from Surface Pit 8, Mound B, lower levels, Old Town II (No. 106).
e, Broken head for sea otter arrow, from fill of Storage House, Old Town II (No. 382).
f, Broken head for sea otter arrow (or fishhook barb?), from Surface Pit 1, Mound B, upper levels, Old Town III (No. 31).
g, *h*, Unfinished (?) heads for sea otter arrows, from Mound B, upper levels, Old Town III (Nos. 358, 202).
i, Broken harpoon head, from Surface Pit 8, Mound B, lower levels, Old Town II (No. 98).
j, Harpoon head, from Mound B, lower levels, Old Town II (No. 314).
k, Broken harpoon head, from Mound B, lower levels, Old Town II (No. 355).
l, Broken harpoon head, from under floor of House 8, Old Town II (No. 733).
m, Broken harpoon head, point resharpened, from Mound A, upper levels, Old Town III (No. 390).

Photograph by Reuben Goldberg.

PLATE 14

Copper arrowheads, knife blades, and pins.

a, Arrowhead, from Mound B, lower levels, Old Town II (No. 323).
b, Arrowhead with cord around tang, from Mound B, lower levels, Old Town II (No. 66).
c, *d*, Arrowheads, from Mound B, upper levels, Old Town III (49-25-38, No. 250).
e, Arrowhead, from outside wall of House 9, Old Town III (No. 858).
f, Pin (or arrowhead tang ?), from fill of House Pit 7, Old Town I (No. 756).
g, Pin (or arrowhead tang ?), found with *i*, Mound B, upper levels, Old Town III (No. 236).
h, Knife with lateral handle wrapped with sinew, hair on blade, from Mound C, upper levels, Old Town I (No. 654).
i, Pin (or arrowhead tang ?), found with *g*, Mound B, upper levels, Old Town III (No. 235).
j, Pin (or arrowhead tang ?), from Mound B, lower levels, Old Town III (No. 360).
k, Broken ulo blade, from Mound B, upper levels, Old Town III (No. 2).
l, Broken ulo blade, from fill of House Pit 1, Old Town III (No. 554).
m, Ulo blade, from Mound B, lower levels, Old Town II (No. 113).

Photograph by Reuben Goldberg.

PLATE 15

Bone arrowheads and small weapon points.

a–e, Barbed points, bird bone, from Mound B, lower levels, Old Town II (Nos. 55, 241, 609, 159, 167).

f, Gorge (?), bird bone, from Mound B, upper levels, Old Town III (No. 253).

g, *i*, Tiny points, bird bone, from Mound B, lower levels, Old Town II (Nos. 271, 63).

h, Tiny point, bird bone, from Mound D, lower levels, Old Town I (No. 918).

j, Tiny point, bird bone, from Mound B, upper levels, Old Town III (No. 105).

k, Barbed point, bird bone, from Surface Pit 8, Mound B, lower levels, Old Town II (No. 119).

l, *n*, Bladelike points, split rib, from Mound B, lower levels, Old Town II (Nos. 163, 102).

m, Bladelike point, split rib, from Mound B, upper levels, Old Town III (No. 62).

o–q, Bladelike points, bird bone, from Mound B, upper levels, Old Town III (Nos. 299, 49-25-40, 170).

r–t, Blades (for arrows?), Mound B, lower levels, Old Town II (Nos. 162, 43, 272).

u, Tanged arrowhead, bird bone, from Mound B, lower levels, Old Town I (No. 920).

v, Tanged arrowhead, mammal bone, from Subsurface Pit 36, Mound B, lower levels, Old Town II (No. 383).

w, Tanged arrowhead, split rib, from Mound B, lower levels, Old Town II (No. 169).

Photograph by Reuben Goldberg.

PLATE 16

Bone chisels, awls, and small tools.

a, Beaver tooth chisel, from Mound B, lower levels, Old Town II (No. 97).

b, Beaver tooth chisel, from Surface Pit 6, Mound B, lower levels, Old Town II (No. 108).

c, Marmot tooth chisel, from Subsurface Pit 31, Mound B, lower levels, Old Town II (No. 240).

d, Bone burin, from Mound B, level unknown, Old Town II or III (No. 620).

e, *f*, Bone burins, from Mound B, upper levels, Old Town III (49-25-39, No. 168).

g, Bone chisel shaped like a beaver tooth, from Mound B, upper levels, Old Town III (No. 61).

h, Eagle claw, Old Town II or III (49-25-49).

i, Bear canine for smoothing baskets, from floor of Storage House, Old Town II (No. 410).

j, Bone tool with flat blunt point, from Mound B, lower levels, Old Town II (No. 323).

k, Tiny knifelike tool, bird bone, from Mound B, lower levels, Old Town II (No. 118).

l, Tiny burinlike tool, hard bone, from Mound B, lower levels, Old Town II (49-25-47).

m, Awl, unsplit bird bone, from Surface Pit 8, Mound B, level unknown, Old Town II or III (No. 216).

n, *p*, Awls, unsplit bird bone, from Mound B, lower levels, Old Town II (Nos. 152, 49-25-48).

o, Awl, unsplit bird bone, from fill of House 8, Old Town II (No. 964).

q–s, Awls, split bird bone, from Mound B, lower levels, Old Town II (Nos. 161, 582, 210).

t, Awl or weapon point, split rib, from Mound B, level unknown, Old Town II or III (No. 117).

u, Awl or weapon point, split rib, from Mound B, upper levels, Old Town III (No. 309).

v, Awl or weapon point, split rib, from Mound B, lower levels, Old Town II (No. 313).

Photograph by Reuben Goldberg.

Plate 17

Ornaments.

a, Halibut vertebra bead, from Mound B, upper levels, Old Town III (No. 165).

b, Oval bead, bird bone, from Mound B, upper levels (?), Old Town III(?) (No. 67).

c, Disk bead, coal, from Mound B, level unknown, Old Town II or III (No. 503).

d, Pendant, unidentified tooth, from Mound A, lower levels, Old Town III (No. 402).

e, Pendant or amulet, bear molar, from Mound B, upper levels, Old Town III (No. 39).

f, Pendant, mountain goat incisor, from Mound B, upper levels, Old Town III (No. 246).

g, Pendant, seal canine, from Surface Pit 8, Mound B, level unknown, Old Town II or III (No. 217).

h, Pendant, seal canine, from Surface Pit 8, Mound B, lower levels, Old Town II (No. 107).

i, Tubular bead, coal, from Mound B, upper levels, Old Town III (No. 961).

j, Tubular bead, coal, from fill of House 9, Old Town III (No. 844).

k–n, Tubular beads, coal, from Mound B, upper levels, Old Town III (Nos. 501, 500, 507, 252).

o, Tubular bead, coal, from fill of House Pit 1, Old Town III (No. 550).

p, Tubular bead, coal, from Mound B, upper levels, Old Town III (No. 269).

q, Unfinished coal bead, hole drilled, from Mound B, lower levels, Old Town II (No. 251).

r, Unfinished coal bead, no hole, from Mound B, lower levels, Old Town II (No. 960).

s, Unfinished coal bead, hole started, from Mound B, lower levels, Old Town II (No. 5).

t, Broken coal bead, from fill above House 9, Old Town III (No. 839).

u, Broken coal bead, from fill of House Pit 1, Old Town III (No. 686).

v, Broken coal bead, from Mound B, upper levels, Old Town III (No. 814).

w, Broken coal bead, from fill of House Pit 1, Old Town III (No. 710).

x, Broken coal bead, from pit below floor of House Pit 1, Old Town III (No. 883).

y, Unfinished tubular coal bead, hole started, from fill of House Pit 1, Old Town III (No. 683).

z, Unfinished disk coal bead, from Mound B, upper levels, Old Town III (No. 958).

aa, Unfinished tubular coal bead, hole drilled, from Mound B, upper levels, Old Town III (No. 275).

bb, Unfinished tubular coal bead, hole started, from Mound B, upper levels, Old Town III (No. 281).

cc–ee, Red hematite, baked claystone used for paint, from fill of House Pit 1, Old Town III (Nos. 711, 664, 681).

Photograph by Reuben Goldberg.

PLATE 18

Twined weaving.

a, Fragments of spruce root basketry, from just above floor of Storage House, Old Town II. Plain berry basket associated with salmonberry seeds and slate arrowhead (fig. 21, *a*), (No. 175); basket with false embroidery (No. 185). Photograph by Kenneth S. Lane.

b, Detail of central portion of Chilkat blanket, from shaman's grave, Knight Island (see pl. 19, *b*). Photograph by Campus Studios, University of Washington.

PLATE 19

Fragments of Chilkat blanket from shaman's grave, Knight Island, Yakutat Bay.

a, Top border with sewn (sea otter?) fur binding and heavy zigzag design.

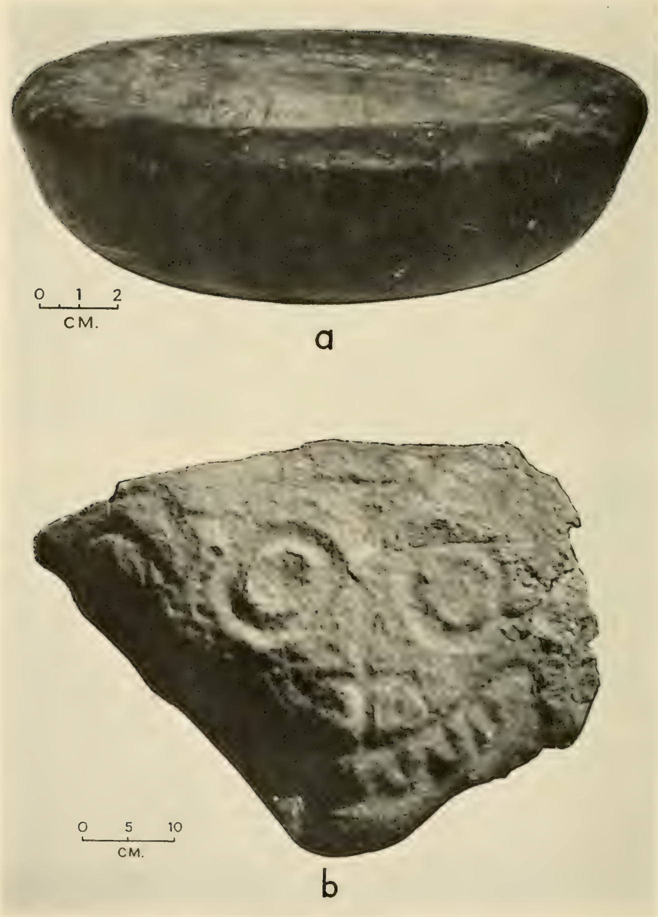
b, Central portion with concentric rectangles and long tassels.

c, Side borders with added fringe and wrapped bundles.

Photographs by Campus Studios, University of Washington.

Knight Island, Yakutat Bay.

(For explanation, see p. 218.)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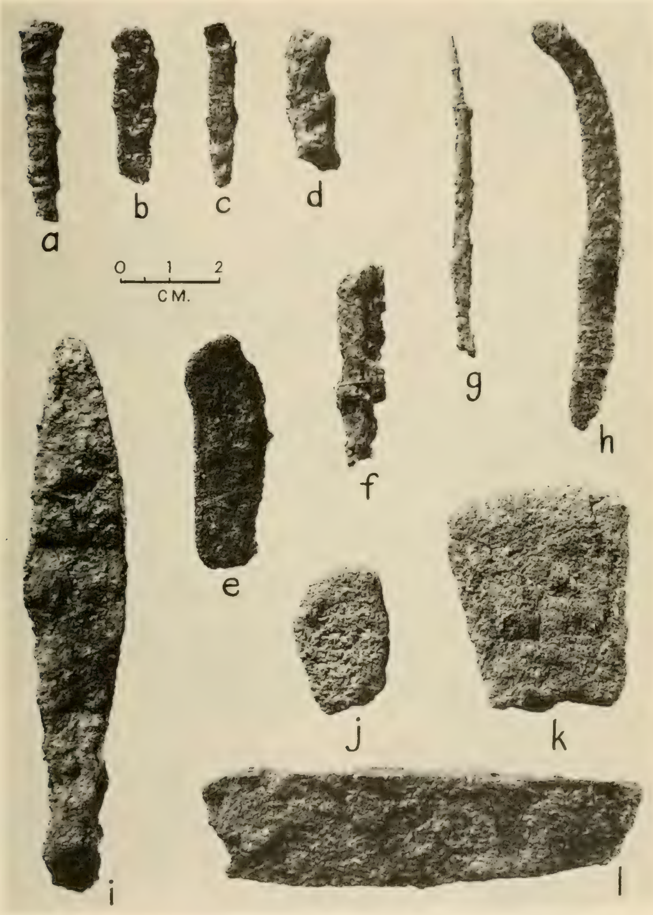
Lamp and petroglyph.

(For explanation, see p. 218.)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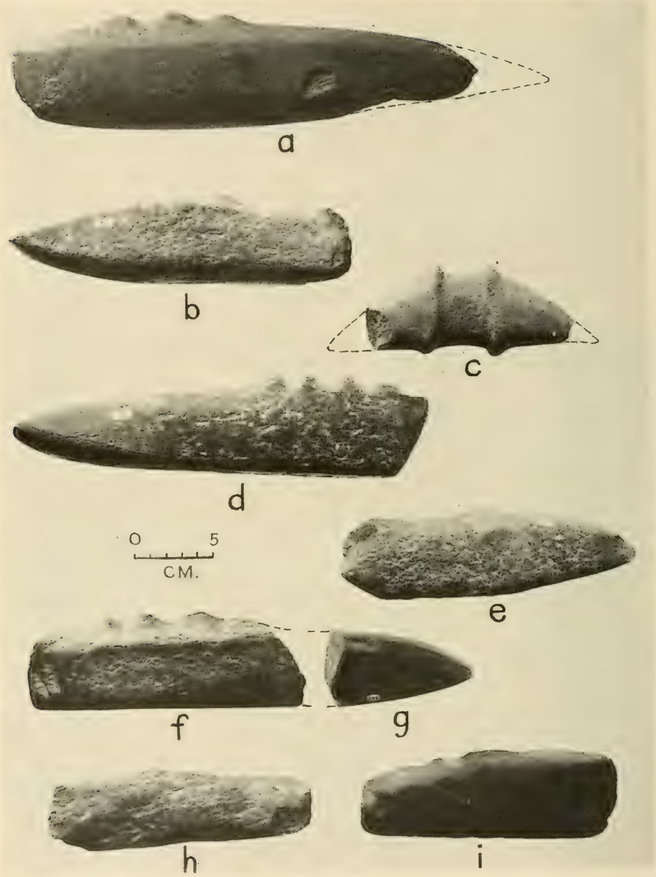
Objects of iron.

(For explanation, see p. 219.)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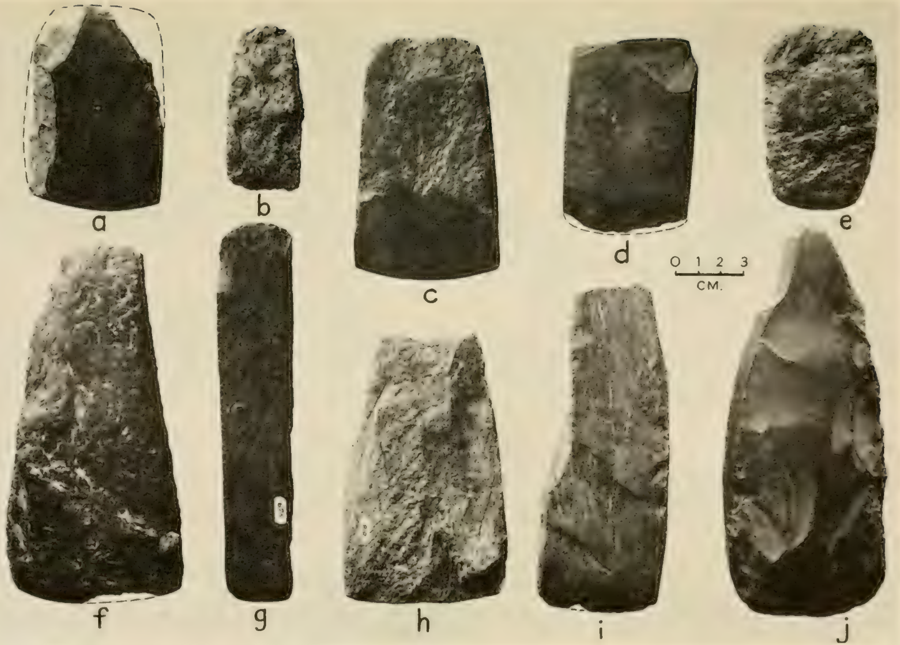
Splitting adzes, axes, and war club.

(For explanation, see p. 219.)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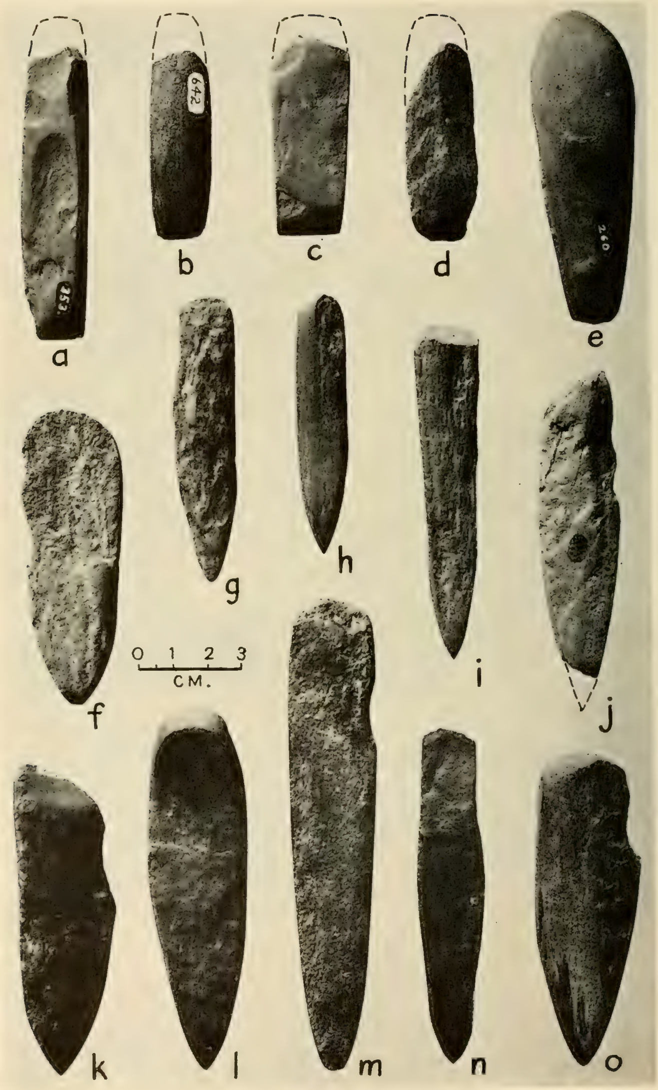
Planing adzes.

(For explanation, see p. 220.)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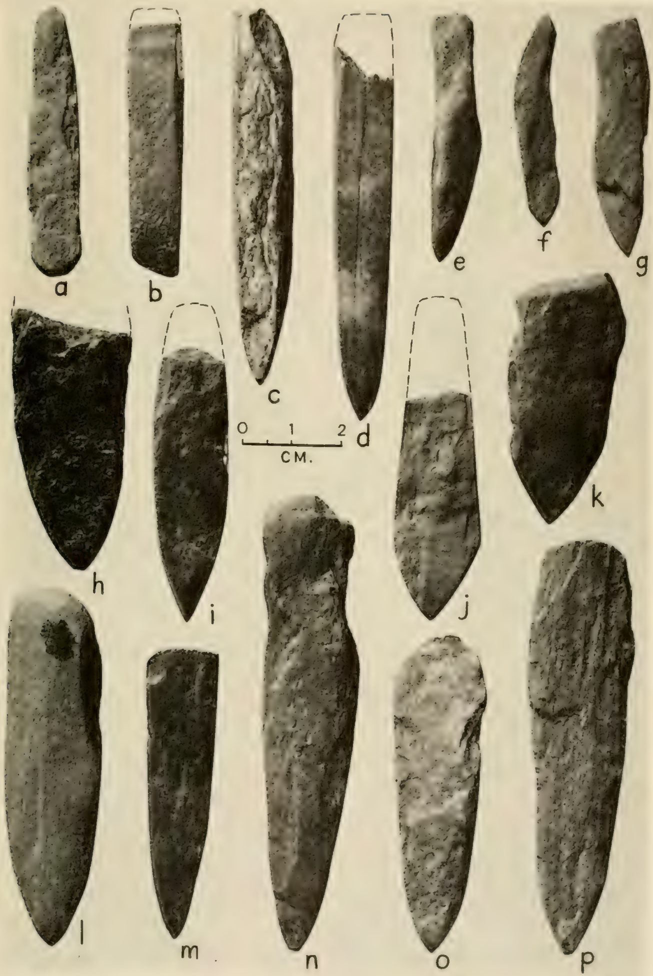
Small woodworking tools like miniature adz blades.

(For explanation, see pp. 220–221.)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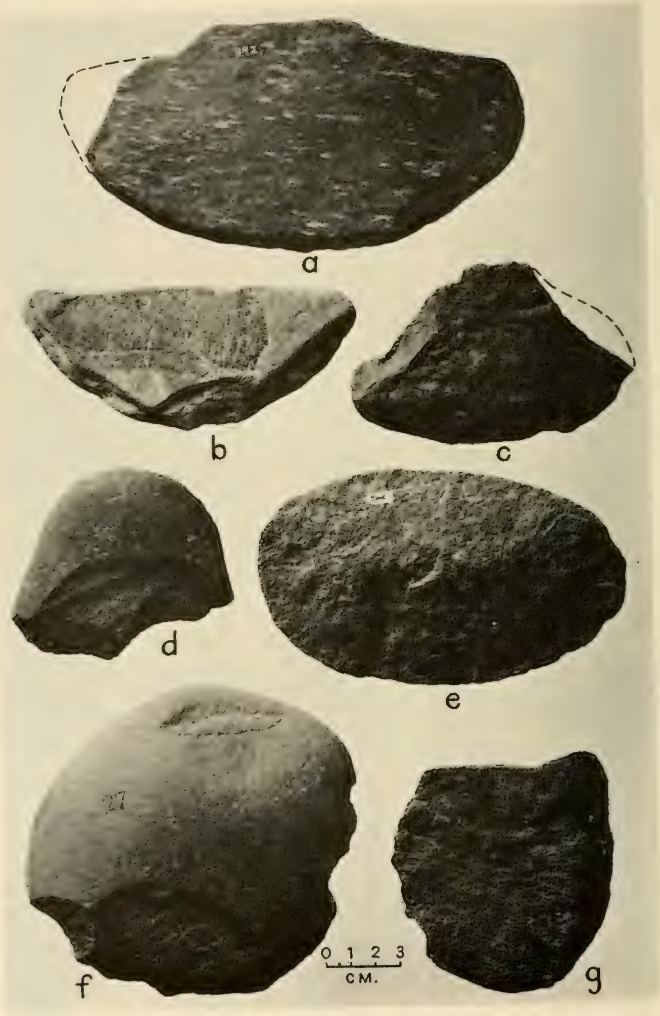
Small woodworking tools like chisels and burins.

(For explanation, see p. 221.)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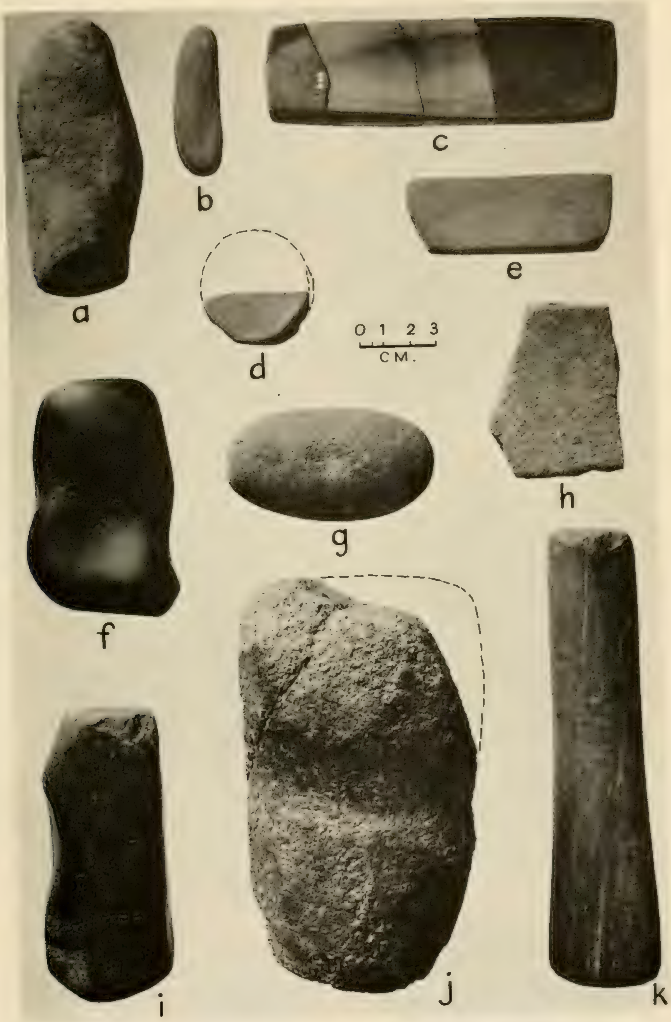
Stone scrapers and choppers.

(For explanation, see pp. 221–222.)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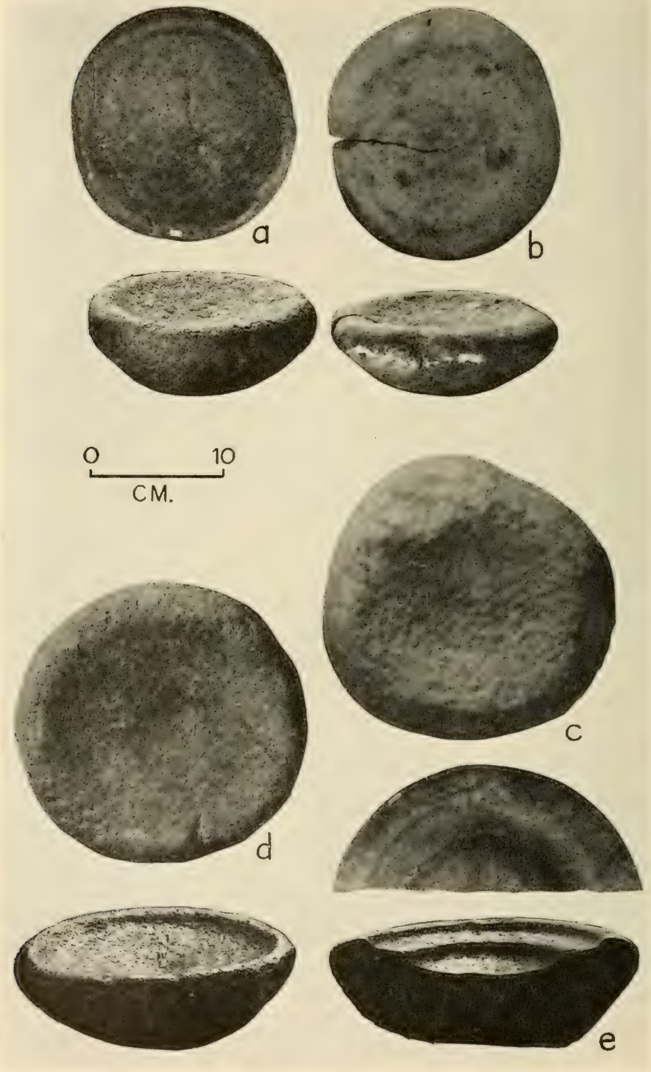
Rubbing tools, whetstones, and hammers.

(For explanation, see p. 222.)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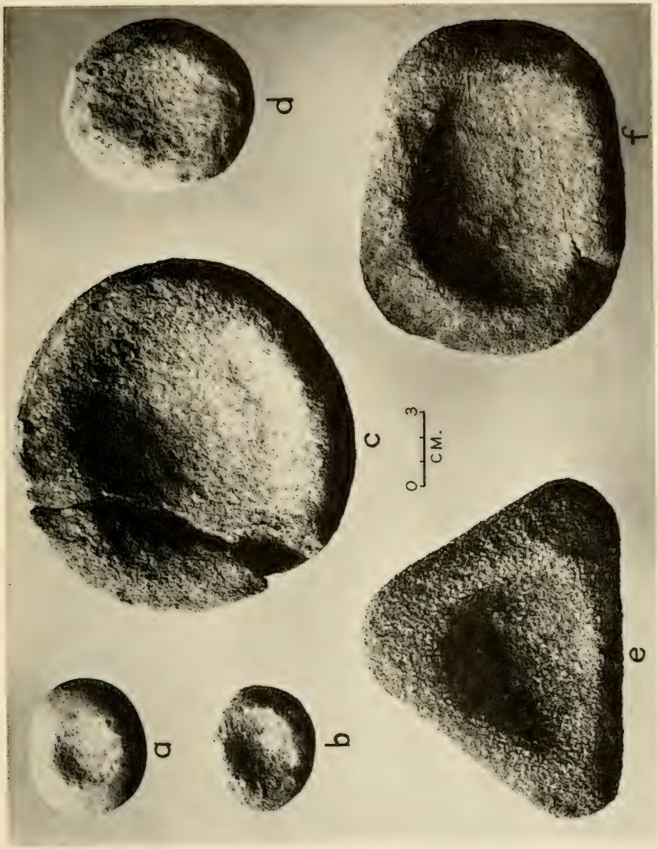
Stone lamps.

(For explanation, see p. 222.)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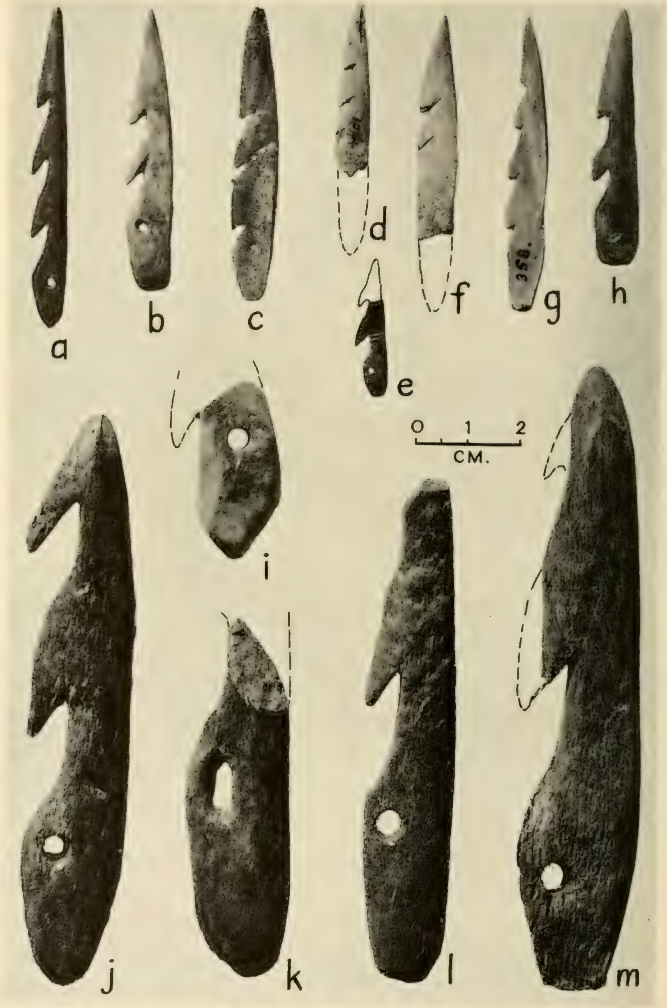
Stone lamps.

(For explanation, see pp. 222-223.)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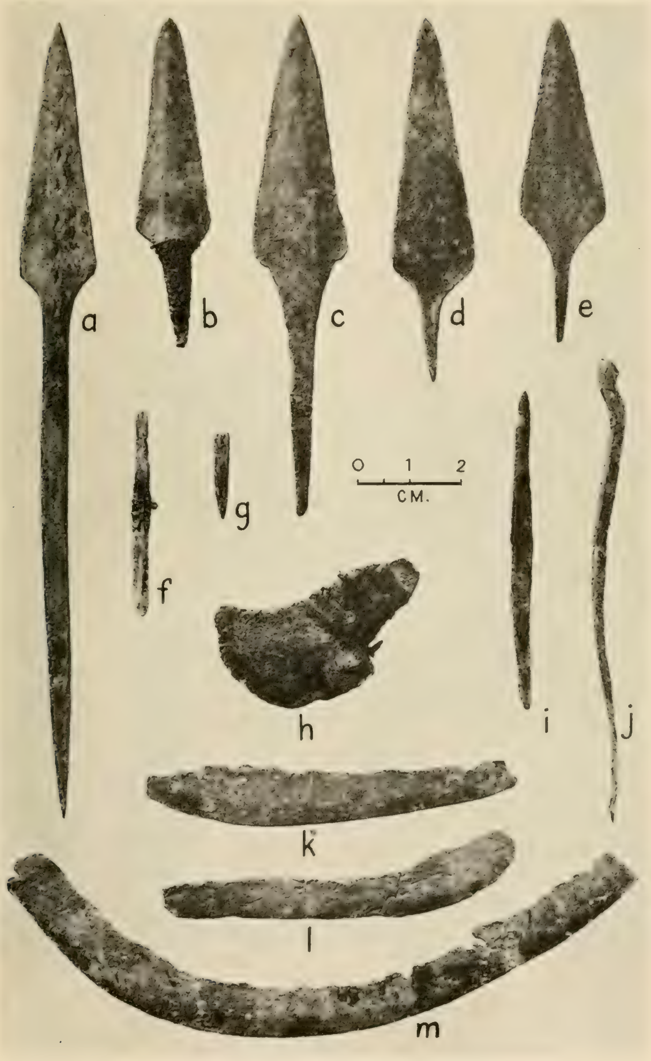
Barbed bone harpoon heads.

(For explanation, see p. 223.)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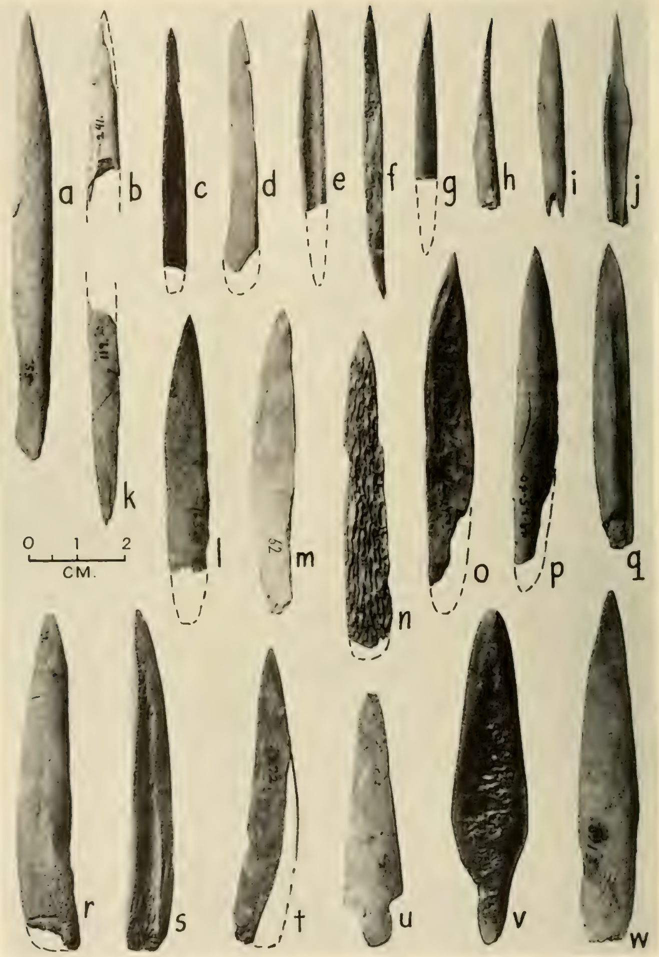
Copper arrowheads, knife blades, and pins.

(For explanation, see p. 223.)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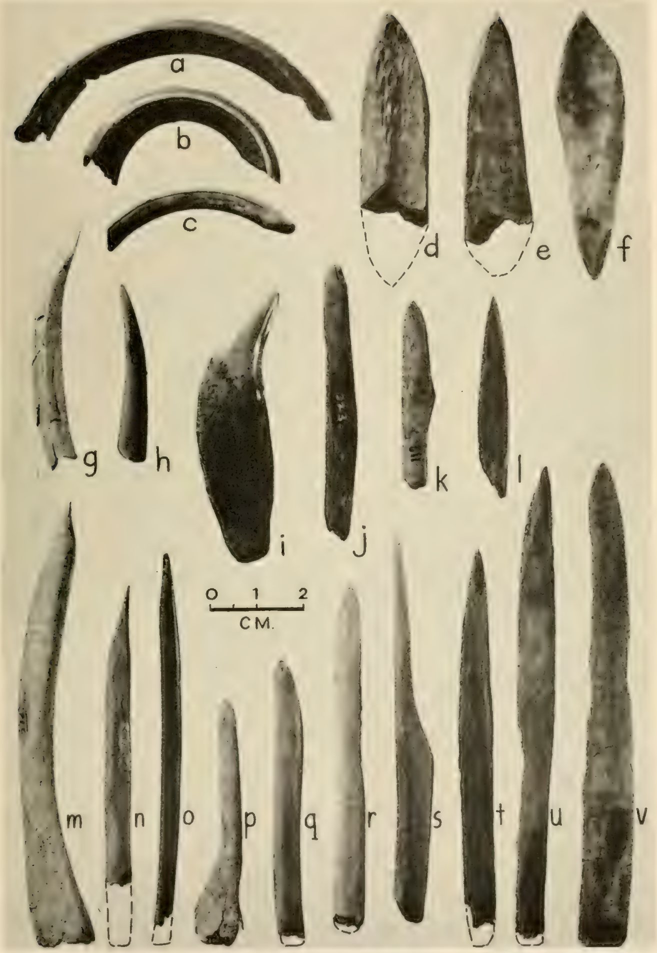
Bone arrowheads and small weapon points.

(For explanation, see p. 224.)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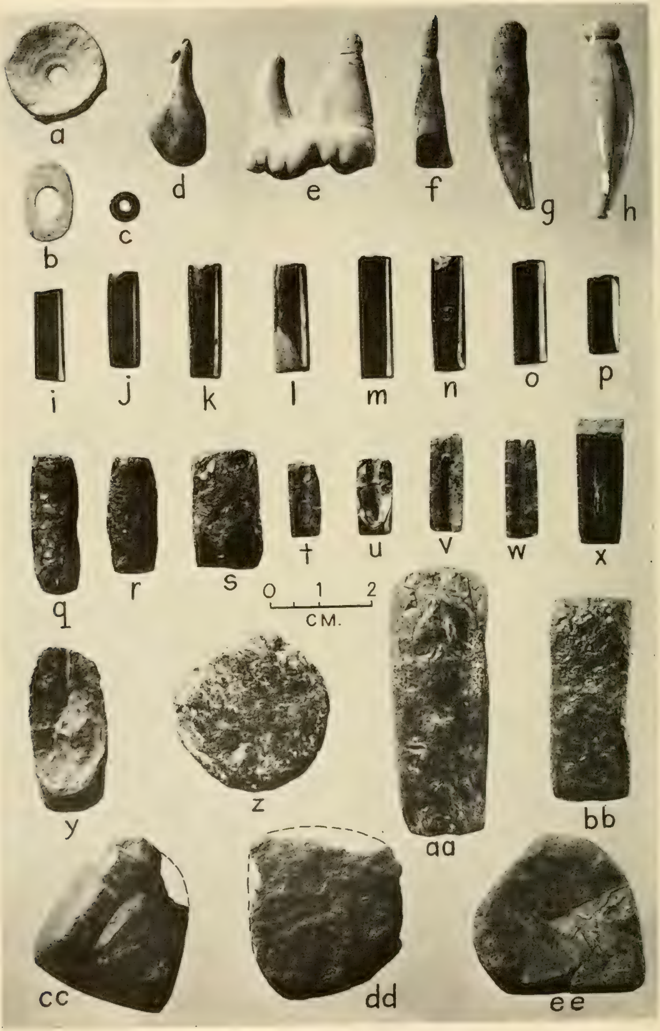
Bone chisels, awls, and small tools.

(For explanation, see pp. 224–225.)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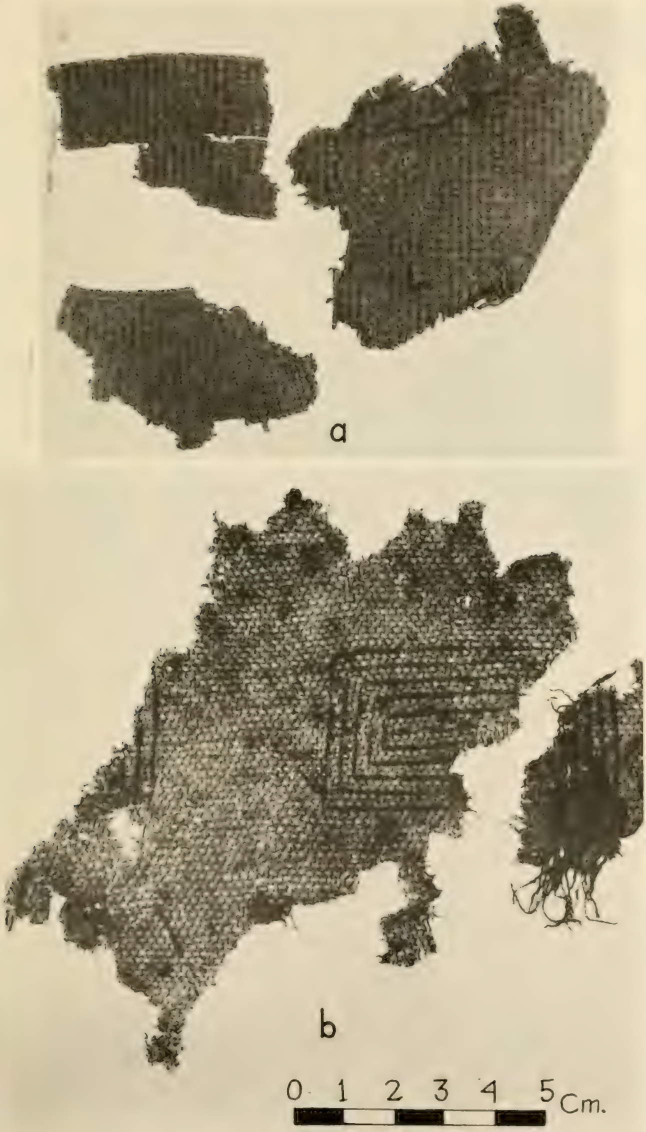
Ornaments.

(For explanation, see p. 225.)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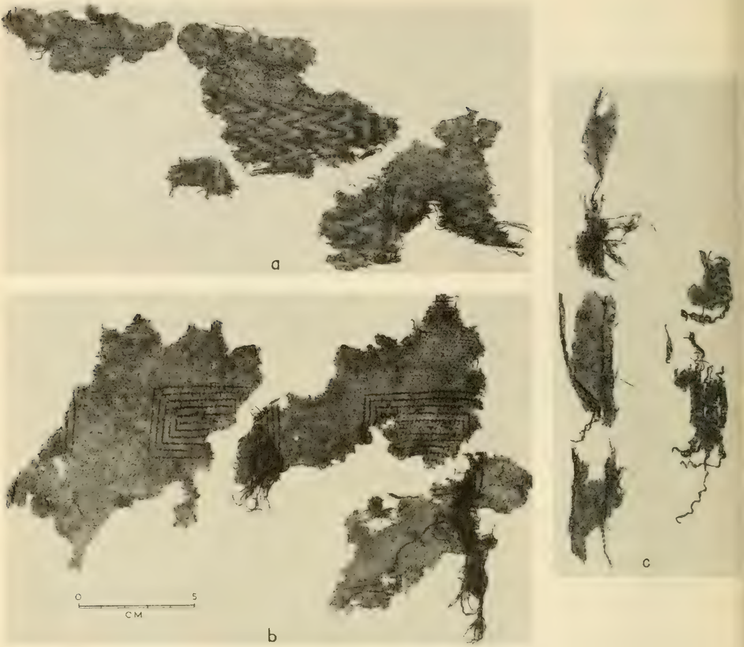
Twined weaving.

(For explanation, see p. 226.)



Fragments of Chilkat blanket from shaman's grave, Knight Island, Yakutat Bay.

(For explanation, see p. 226.)

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